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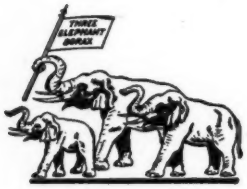

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Better Crops with PLANT FOOD

The Whole Truth—Not Selected Truth

R. H. Stinchfield, *Editor*
Editorial Office: 1155 16th Street, N. W., Washington 6, D. C.

VOLUME XXVIII NO. 9

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THE MAGIC OF THE FIRST SNOW FALL

Better Crops with PLANT FOOD

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VOL. XXVIII WASHINGTON, D. C., NOVEMBER, 1944 No. 9

The Golden Age of . . .

GRUB

Jeff McDermid

WITHOUT casting any reflections at your wife's cooking, I would like to take you back with me to the situation around a Thanksgiving dinner table before the first world war. It would take a complete edition of Fanny Farmer (how aptly named) and a dozen of the best give-away recipe books to describe or analyze the gusty viands and tempting tid-bits which Mother and sisters spread before us. Their redolent repast to mark the climax of the season's plenty was not only a silent but steaming tribute to many diligent hours in the pantry and kitchen, but an indirect cause of genuine satisfaction to the menfolks who provided most of it in its raw state.

There were many little customs regularly followed in the thorough enjoyment of that huge family feast. Father began the ritual with his customary devotions, praising the Creator for a sort of junior partnership in successful husbandry, and winding up with thanks for health and heavy rural appetites to appreciate the largess of country abundance.

The kids had to engage in a wishing event centered on the three or more wishbones found among the ruins, the cold hard cider must be generously sampled and praised, and he who drew the stern bone of the bird was dubbed the last one over the matrimonial fence, if he were young and single.

Although warned in advance to save some cargo space for the final course, we usually were pretty well stuffed by the time the girls brought in those husky, juicy, oven-browned pies, curlicued and cross-hatched with fronds and filigree.

As we sat groaning with ultra re-

pleteness and loose belt buckles, it was time for our parents to indulge their pet satisfaction. They had come west as children in the covered wagon and seen some rough goings-on and no little privation. They had seen families sicken and perish for want of ordinary sustenance and fully realized the triumph of those who had stuck and finally succeeded.

"Now we have a fine family gathered around us able to enjoy the fruit of our labor and the land's abundance," was their comment on this occasion. "Mark you, almost every ounce of what you have partaken today, except the sugar and the salt, has come right from this old place of ours—the homestead which your grandpa got title to by a deed signed by President Tyler. Remember in the years to come that you were raised on food grown on your own ancestral acres and that every Thanksgiving we felt just like the Puritans, except for toting guns and dodging Indians."

AND so this is where I leave the bulging board for awhile and recount again some of the ideas and ideals of that day and age of rural simplicity, contrasted somewhat to the realistic pattern of today. It was pardonable indeed for all of us to lack forward vision after indulging in all that magnificent menu, garnered with so little cash cost. It is no disparagement to our citizenry of the golden age of agriculture that we could not anticipate gradual shifts to different circumstances.

First, in those days farm folks always regarded themselves as the only original primary producers; and what is more, thought of themselves as producers only—not as consumers.

Their immediate local outlook when they went to town was likely to make them feel like the only real producers. In those times few factories existed in the small midwest countryside and neither smoke-stacks nor silos poked skyward. The town had its small bank, law office or two, a vet clinic, a blacksmith shop, and a row of stores. The clerks and members of the legal and ministerial professions, of course, looked like drones and idlers compared with the muscular and sweat-streaked ruralites. The banker was a landowner and a money-lender, which put him at once in the cream-skimming class, they said. The closest ones to be admitted to the sacred producer class were the vet and the smithy, but inasmuch as they derived their income from the surrounding farm patronage, they too were not taken seriously as bona fide original producers.

Owing to the homespun type of livelihood and the wealth and variety of food and drink to be stored away in the wake of the plow, our farm folks of those times found it easy to think they were eternal producers and had no consuming worries to fret them. If they ever thought of the store, it was usually in terms of barter and trade, and the services of the vet and the smithy were just little local conveniences of no great economic value. The government experts who figure parity and exchange value in cash or total income between the land operator and his associates of urban utility had not been born yet.

Even now much of that attitude remains in the country, the penchant for regarding the farm as the chief of all ends to production, and the farmer as one who eternally exports materials and pays the freight both ways.

This is what has made it hard sometimes to have our native farm folk realize the need for overseas trade in both directions, our position having changed from the debtor to the creditor nation. He has always figured it was the ability to produce and sell that counted, while consumption and buying of imported goods smacked of real radical departure from old patterns.

Second, in those days of the plentiful home dinners, we thought we might always rely on local, home, and country environment for our necessities and comforts.

There is little need to go into that very far, because it was so obviously

the mainspring of existence in the days of yore. Men traveled little, wanted only the substance and not the cream, were content to exchange views on weather and varieties with adjacent neighbors, and asked for no innovations beyond the rude makeshifts which were the fruit of local toil and talent.

THE outside, foreign world was to them a set of bleak lands marked by varied colors in the dog-eared geography. These realms were peopled by strange and fantastic heathens, and races of polyglot tongue and mean tempers. To be "shed of" them in a hurry, after once finding out their locations, was just about the general sentiment.

When somebody ventured into a distant metropolis he was warned about gold bricks and bargain city halls, and hence cities became known as wicked deserts amid the green oases of a countrified majority. There were no labor unions then and whatever the price tag stated at the implement store represented the local margin plus the dashblasted railway tolls. So that element of the present-day grouch on labor had not reached the hinterlands. And they recalled that Cyrus H. McCormick and John Appleby, two of the potent inventors of that age, were just husky farm lads with good original ideas of country service.

And, thank heaven, the grocery stores of the times long gone were not stocked with bursting packages of crispy breakfast food, polished rice, and patent flours, so that the sugar barrel, the coffee grinder, and the tea chests were the main reservoirs of rural wants in grub.

But we have gone a long ways since then, and it is still hard to face the facts of an interlocking sort of existence between the farm and the factory, between the barnyard and the pavement. The politicians play on it more or less and seek to rouse the old prejudices and latent animosities, while honest-to-goodness city labor too seldom has a chance to chat confidentially with the farmer.

Third, folks munching around that happy board said that the forms and preferences for food would never change. After tasting the rich roasts, corn-on-cob, stuffed turkey, taters and gravy, vegetable soup, and native fruit pies garnished with natural, home-cured nippy cheddar and washed down with warm, sweet milk, is it any wonder nobody imagined a period ahead when fads, fancies, and long-distance trading would cause a wondrous array of concoctions and commodities to become standard victuals?

What would grandpa have said about dried milk, some for humans made on one kind of machine and another brand for livestock rolled off a big hot dingus in shreds and patches? What would uncle have remarked about breaking perfectly good eggs into a big copper kettle and then reducing the mess to a yellowish powder for future mixing and cooking?

Who would have visioned vitamins, in chewing gum, bread or candy, and taken out of bottles night and morning? What would the guy who soldiered at San Juan Hill have said if you told him a future war would be fought by Yanks using dried chaff to make soup of and tablets to equal a square meal?

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Mississippi Crop and Pasture Production Program 1942-43

By J. M. Weeks

Agronomist, Mississippi Extension Service, State College, Mississippi.

IN 1942, plans were made with specialists of the Mississippi Extension Service, county agents, and other agriculturists, for conducting organized potash demonstrations with crops and pastures. The plan called for adding potash to whatever treatments had already been used on the farms, leaving a strip of land without potash as a check plot. In most cases, the demonstration fields selected had already received an application of either lime, superphosphate, or basic slag, or a combination of lime and superphosphate. In a few cases no treatment of any kind had been given. This accounts for the fields in which potash alone was used.

The demonstration fields varied in size from 1 acre to 30 acres, and the areas treated with potash from ½ to 12 acres. Most of the potash-treated plots ranged from 2 to 10 acres. The potash materials used were muriate of potash 60% and manure salts 22%. The muriate of potash was applied at the rate of 100 pounds per acre, with a few exceptions where 200 pounds were applied. The manure salts were applied at the rate of 100 to 200 pounds, depending upon the crop and the time of application. For many of the tests, the material was applied in the fall of the year and at the time of preparing the land for seeding, while in other cases it was applied as a top-dressing or side-dressing. In the case of cotton, and certain other crops, the potash was applied in drill before bedding the land for planting. The early applications proved more profitable in practically all cases.

In general, the demonstration program proved both enlightening and profitable and convinced many farmers of the value of potash for crops and pastures. Due to reduced travel facilities, extremely dry weather in some sections, and various other causes, the records of yield were not obtained on many demonstrations, but, according to agriculturists and farmers in charge of the tests, most of the demonstrations served a useful purpose in the communities where conducted. In many cases, especially on the leguminous crops, the application of potash doubled the crop yield.

When studying the yield data following, it should be remembered that many of the records given represent only a single clipping and not the total yield for the year. If clippings had been made on pastures throughout the summer and fall, the results from potash, no doubt, would have been considerably higher, due to the effect it has in helping plants to withstand drought. Some of the cooperating farmers reported that the potash-treated pastures afforded more grazing during the summer months and remained much greener than did the checks. Many reports gave estimates on the percentage of grazing on potash-treated plots as compared with the checks. Most of these were favorable, but due to the nature of the reports, they cannot be given in a summary of this kind. This applies to crops as well as pastures. Some of the general reports will be shown further on in the discussion.

For convenience, the demonstrations

This Holmes County, Mississippi, field (Demonstration No. 26) was fertilized with superphosphate alone, for a crop of kudzu. The picture was made in August 1943. (See picture below.)

given in the appendix will be referred to by number. For example (Dem. No. 1), with Austrian winter peas, was conducted on the farm of C. V. Maxwell, Pickens, Mississippi. This field was 12 acres in size, and at the time of seeding, the entire field was treated with 500 pounds of basic slag per acre. At the same time, one-half of the field received an application of 100 pounds of muriate of potash 60% per acre in addition to the basic slag. Where basic slag alone was used, the yield of green material amounted to 7,441 pounds per acre. Where potash was added, the yield was increased to 14,247 pounds of green material per acre. In the same community, on the farm of B. E. Presley (Dem. No. 2), one-half of a large field of vetch received potash in addition to the lime and superphosphate used on the entire field. The yield here was more than doubled. Yields of this kind from potash are not unusual on this land which lies between the loessial bluffs and the Big Black River.

The most consistent yields from potash were obtained from tests with Wild Winter Peas (Lathyrus hirsutus),

This plot, in the same demonstration and photographed on the same day as above, had received 60 per cent muriate of potash in addition to the superphosphate.

known in Alabama as Caley Pea, and in Louisiana as the Singletary Pea. The results are summarized in Table 1. With this pea, it is not unusual to obtain yields of 30,000 pounds of green material per acre on reasonably good land, well fertilized. In three tests in which basic slag alone was used, the yield was 13,102 pounds of green material per acre. Where potash was added, the yield was increased to 19,818 pounds of green material. This for grazing, or for hay and seed. The results from potash in these demonstrations varied somewhat with the crops and soil, but are fairly consistent. When superphosphate, superphosphate and lime, or basic slag were used, the yield was 10,543 pounds of green forage per acre. But when potash was added, the yield was increased to 16,819 pounds of forage, an increase of 6,276 pounds of green material per acre.

TABLE 1.—WILD WINTER PEAS, FARMER'S TREATMENT WITH AND WITHOUT MURIATE OF POTASH 60%

(Demonstrations 3 to 10)

Number Cases	Treatment	Green Forage	
		Yield Per Acre	Increase Due to Potash
3	500 lbs. Basic Slag	13,102 lbs.	Check
	500 lbs. Basic Slag 100 lbs. Muriate of Potash	19,818 lbs.	6,716 lbs.
1	200 lbs. Superphosphate 500 lbs. Lime	20,908 lbs.	Check
	200 lbs. Superphosphate 500 lbs. Lime 100 lbs. Muriate of Potash	31,472 lbs.	10,564 lbs.
1	No treatment	15,681 lbs.	Check
	100 lbs. Muriate of Potash	28,749 lbs.	13,068 lbs.
3	250 lbs. Superphosphate 500 lbs. Lime*	5,953 lbs.	Check
	250 lbs. Superphosphate 500 lbs. Lime 100 lbs. Muriate of Potash	12,559 lbs.	6,606 lbs.

* No lime was used in Dem. No. 5.

represents an increase of 6,716 pounds per acre. Demonstration No. 8 illustrates the excellent yield that may be obtained from Wild Winter Peas when properly handled.

Demonstrations No. 2 and 11 through 20 (Table 2) are somewhat similar in that they are all forage crops to be grazed or cut for hay. They include such crops as hop clover, white clover, oats and white clover, oats and pasture mixture, red clover and oats, vetch, and mixtures of these, all grown

Several demonstrations with alfalfa were inaugurated, but records were obtained on only three tests. The results on some of these tests included only one cutting. Differing somewhat from the other demonstrations, both potash and borax were added to the farm practice. These demonstrations are summarized in Table 3. The actual results here cannot be clearly understood or interpreted due to the arrangement of the plots and treatments. Besides, in some of the tests

TABLE 2.—FORAGE CROPS FOR HAY OR GRAZING AND PASTURES, FARMER'S TREATMENT WITH AND WITHOUT MURIATE OF POTASH 60%

(Demonstrations No. 2 and 11 to 20)

Number Cases	Treatment	Green Forage	
		Yield Per Acre	Increase Due to Potash
11	Superphosphate, Superphosphate and Lime, or Basic Slag*	10,543 lbs.	Check
	Superphosphate, Superphosphate and Lime, or Basic Slag 100 lbs. Muriate of Potash	16,819 lbs.	6,276 lbs.

* Demonstration No. 17 included in this summary was treated with potash alone.

where only one cutting was weighed, the farmers reported that later the potash showed excellent results. However, the increase from borax was very evident in all cases and became more outstanding during the dry summer months. The results on these alfalfa demonstrations will be checked again in 1944.

Field conservationists of the Soil Conservation Service, cooperating in this program, conducted a number of demonstrations with kudzu and mentioned profitable responses to potash. However, only two reports showing the actual yield were received. The results of these are summarized in Table 4. Averaging the two tests, superphosphate alone produced 10,000 pounds of material from a single cutting. When potash was added to the superphosphate, the yield was increased to 18,530 pounds, or an increase of 8,530 pounds of green material due to potash. A photograph was made later of demonstration number 26, conducted in Holmes County. At the time the photograph was made, this kudzu probably would have yielded as much as 50,000 pounds of green material to

TABLE 3.—ALFALFA, FARMER'S TREATMENT WITH AND WITHOUT POTASH AND BORAX

(Demonstrations 21, 22 & 23)

Number Cases	Treatment	Green Forage	
		Yield Per Acre	Increase Due to Potash, Borax
2	Superphosphate, or Superphosphate and Lime	19,111 lbs.	Check
	Superphosphate, or Superphosphate and Lime, Plus Potash	19,928 lbs.	817 lbs.
	Superphosphate, or Superphosphate and Lime, Plus Potash and Borax	27,113 lbs.	7,185 lbs.
1	Superphosphate and Lime	9,365 lbs.	Check
	Superphosphate, Lime, Manure Salts, and Borax	13,285 lbs.	3,920 lbs.

TABLE 4.—KUDZU, FARMER'S TREATMENT WITH AND WITHOUT POTASH*

(Demonstrations 26 & 41)

Number Cases	Treatment	Green Forage	
		Yield Per Acre	Increase Due to Potash
2	Superphosphate alone Superphosphate plus Potash	10,000 lbs. 18,530 lbs.	Check 8,530 lbs.

* Potash materials used were muriate of potash 60% and manure salts 22%.

the acre on the potash-treated plot. The check plot probably would not have made more than one-tenth this amount.

The results from potash on lespedeza were not so consistent as with some of the other crops, but this was probably due in part to the extremely dry summer and low crop yield. The farmer's treatment varied considerably, but in most cases either superphosphate, superphosphate and lime, or basic slag was used. Averaging the results from six demonstrations, summarized in Table 5, the application of potash produced an increase of 4,901 pounds of green material to the acre.

A number of very good potash demonstrations were conducted with lespedeza sericea, but the records of yield were not obtained. The only record reported on sericea came from Calhoun County, and the yield resulting from potash was good. In this

TABLE 5.—LESPEDEZA, FARMER'S TREATMENT WITH AND WITHOUT POTASH*

(Demonstrations 25, 27, 28, 29, 30 & 31)

Number Cases	Treatment	Green Forage	
		Yield Per Acre	Increase Due to Potash
6	Farmer's Treatment Farmer's Treatment plus Potash	7,731 lbs. 12,632 lbs.	Check 4,901 lbs.

* Potash materials used were muriate of potash 60% and manure salts 22%.

TABLE 6.—SOYBEANS FOR *Hay*, FARMER'S TREATMENT WITH AND WITHOUT POTASH

(Demonstrations 40, 41, 42 & 43)

Number Cases	Treatment	Green Forage	
		Yield Per Acre	Increase Due to Potash
4	Farmer's Treatment Farmer's Treatment Plus Potash	11,982 lbs. 17,423 lbs.	Check 5,441 lbs.

TABLE 7.—COTTON, FARMER'S TREATMENT WITH AND WITHOUT POTASH

(Demonstrations 34, 35, 36, 37 & 38)

Number Cases	Treatment	Lbs. Seed Cotton Per Acre	
		Yield Per Acre	Increase Due to Potash
5	30 lbs. Commercial Nitrogen, or Winter legume	940	Check
	30 lbs. Commercial Nitrogen, or Winter legume 100 lbs. Muriate of Potash	1,368	428

demonstration (No. 32) the yield of hay was doubled from the use of potash.

When potash was added to the farmer's treatment for soybeans, the yield of green forage was increased from 11,982 to 17,423 pounds. This is an average increase of 5,441 pounds of green forage per acre resulting from the potash. These demonstrations are summarized in Table 6.

In some of the counties where the use of potash for cotton was not an established practice, several potash demonstrations with cotton were conducted. These demonstrations are summarized in Table 7. In three tests, 30 pounds of nitrogen from Uramon produced 1,149 pounds of seed cotton per acre. When 100 pounds of muriate of potash were added, the seed cotton was increased to 1,525 pounds. This is an increase of 376 pounds of seed cotton per acre. In two tests where 100 pounds muriate of potash were applied to vetch and followed by cotton, the yield was increased from 675 to 1,131 pounds seed cotton.

In the five tests where 100 pounds muriate of potash were added to the farmer's treatment, the yield was increased from 940 pounds seed cotton to 1,368 pounds, or an average increase of 428 pounds seed cotton per acre.

In Table 8, all the forage crops and pasture demonstrations included in Tables 1 to 6 are averaged. In 34 tests, the farmer's treatment, usually superphosphate, superphosphate and lime, or basic slag, produced a yield of 12,437 pounds of green forage per acre. When potash was added to the farmer's treatment, the yield was increased to 19,121 pounds of green material. This summary shows an average increase of 6,684 pounds of green forage per acre resulting from the potash treatment.

In addition to the reports such as summarized above, a number of gen-

TABLE 8.—FORAGE CROPS AND PASTURES, A SUMMARY OF DEMONSTRATIONS IN TABLES 1 TO 6. THE FARMER'S TREATMENT WITH AND WITHOUT POTASH

Number Cases	Treatment	Green Forage	
		Yield Per Acre	Increase Due to Potash
34	Farmer's Treatment	12,437 lbs.	Check
	Farmer's Treatment Plus Potash	19,121 lbs.	6,684 lbs.

Demonstration No. 5 on wild winter peas was conducted on the J. M. Kimbrough farm. Plots received: Left, 250 lbs. superphosphate; center, 250 lbs. superphosphate and 100 lbs. 60 per cent muriate of potash; and right, 250 lbs. superphosphate and 300 lbs. muriate of potash.

eral reports were received. Typical of these reports are the following:

J. C. Taylor, County Agent, Decatur, Mississippi: "A. S. Burns used 1,000 pounds of your potash and 1 ton of his own. He used this potash (muriate) at the rate of 100 pounds per acre in plots, some having phosphate, some having lime, some basic slag, and some without any other fertilizer materials, and each plot where this was used was outstanding, more grazing than on any other spots compared. In fact, we feel that any farmer would be justified in adding potash to his pasture land. Another thing we checked on Mr. Burns' place was this: On cuts where he used potash, his lespedeza was greener; on cuts where no potash was used, the lespedeza had a yellowish color."

Mr. Taylor further states: "On Charles Williams' demonstration, he used 200 pounds of muriate on carpet grass and lespedeza pasture, one plot being one acre, one plot one-half acre, and the cows grazed up even on each place where he used this potash. Even though there had been lime and phosphate used on the pasture, there was a distinct line where the cows grazed the potash-treated plots, which was the most remarkable thing we observed. On his lespedeza demonstration, he had three plots. On one of these acres, 100 pounds of muriate, on one 200 pounds, on another no potash was used, but all had 500 pounds of basic slag per acre. We estimated as close as possible on his hay production and figured that where he used 200 pounds of muriate and 500 pounds basic slag, he must have made 4 to 4½ tons of some of the finest hay I have ever seen. Where he used 100 pounds muriate, the yield was 3½ tons; on the other (check), roughly, 2½ to 3 tons."

The chances are that the above estimates on hay production are a bit too high, but the comparison serves to show the results obtained from the potash.

A. G. Bennett, Assistant County Agent, Booneville, Mississippi, reports: "Potash on soybeans: Around 22 unit farmers used potash on soybeans and in practically every case we could tell quite a bit of difference, similar to the two reports that are enclosed. The potash especially paid off on the Mantachie soil. Potash on lespedeza:

There were no good check plots from potash where applied to lespedeza. In fact, in a number of cases the potash burned the lespedeza and there was no stand at all. This could be due to the dry weather as well as to being applied while the plants were wet. The potash was outstanding as a side-dressing to cotton on Paden soil. No weights were taken on this plot, but the people in the community all saw this difference and I am sure they will profit by this next year. We also had an outstanding demonstration on potash and lime applied under corn against lime by itself. No checks were made on this plot, however. The potash check plots on pasture were no good nor were any clippings made on the pasture demonstrations, due to the drought as well as over-grazing. In general, I think each unit farmer who used potash probably realizes the need of this material on most of his soils."

The potash used and referred to above by Mr. Bennett was manure salts donated for 22 Unit Farms last year. This material, if applied on lespedeza, or any other plant when wet, will kill the plants. This is probably what happened in the lespedeza tests mentioned above.

Geo. A. Mullendore, County Agent, Meadville, Mississippi, writes: "I have personally visited the farms of all the cooperators and have checked with them on their demonstrations, and do not believe that the results as shown on these forms quite represent the increase that they really received. It is interesting to note how many of their neighbors visited their farms during the season, most of whom never used potash in any form except in mixed fertilizers. As an example, one of our largest cotton farmers who generally makes 100 bales of cotton each year said: 'After seeing the results from potash I believe it is more essential than nitrogen, and I plan to use it on every acre of my crop land next year.' "

The demonstration yields referred to above were reported on a percentage increase basis, and the exact yields were not given. This accounts for the fact that they were not included in the summary. Many reports of this type were received. However, demonstrations of this type usually get the desired results in the communities where conducted.

Demonstration No. 13 was conducted on white clover pasture. The plot on the left received potash, lime, and superphosphate; on the right, lime and superphosphate only. Yield: Left, 12,196.8; Right, 8,058.6.

A group of farmers and agriculturists, during one of the tours of the demonstrations, inspect a field of wild winter peas.

Mississippi Crop and Pasture Production Program 1942-43

Name & Address of Farmer Soil	Crop	Fertilizer Treatment	Yield Per Acre Gr. Wt., Lbs.
1. C. V. Maxwell, Pickens, Miss. Terrace soil	Austrian Peas	500# Basic Slag 500# Basic Slag 100# Muriate of Potash	7,441 14,247
2. B. E. Presley Pickens, Miss. Terrace soil	Vetch	250# Superphosphate 1000# Lime 250# Superphosphate 1000# Lime 100# Muriate of potash	 9,256 23,958
3. W. S. Pittman Winona, Miss. Terrace soil	Wild Winter Peas & Vetch	500# Basic Slag 500# Basic Slag 100# Muriate of potash	11,107 16,226
4. H. W. Vandiver Cruger, Miss. Delta foothills	Wild Winter Peas & Vetch	No treatment 100# Muriate of potash	15,681 28,749
5. J. M. Kimbrough Lexington, Miss. Terrace soil	Wild Winter Peas	250# Superphosphate 250# Superphosphate 100# Muriate of potash 250# Superphosphate 300# Muriate of potash	5,445 9,692 13,939
6. R. M. Branch Goodman, Miss. Terrace soil	Wild Winter Peas	250# Superphosphate 500# Lime 250# Superphosphate 500# Lime 100# Muriate of potash	 5,227 11,325

(*Turn to page* 45)

Growing Quality in Tomatoes

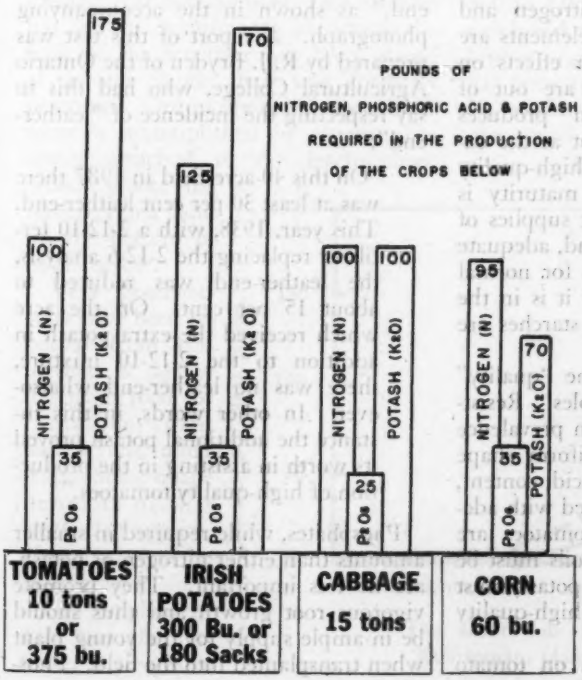
By E. K. Hampson

Hamilton, Ontario, Canada

A LITTLE boy when asked to define an elephant replied that he couldn't define it but he knew one when he saw it. Perhaps the term "quality" is just as difficult to define, but it is still easily recognized when encountered. Quality is usually a composite of several factors, some of which may be measured accurately by scientific devices. Others are indefinable and are not subject to scientific measurement.

But whether or not quality may be measured or defined, it is of paramount importance in the merchandising of food products. Quality must be grown. It can not be added later, as one might add seasoning to soup. A processor can not make a high-grade product from a low-grade article. It is true, of course, that by faulty processing high-quality fruit or vegetables may end up as low-grade goods.

How may high-quality tomatoes be produced? First, growers should aim at high yields per acre. Seldom, if ever, are low yields associated with high quality, and in most cases high yields and good quality are found to be complementary. Hester of New Jersey reports that of 108 growers delivering tomatoes to a large processor, 53 delivered 10 tons or more per acre. These graded an average of 74 per cent U. S. No. 1, 25 per cent U. S. No. 2, and 1 per cent culls. The remaining 55 growers delivered 5 tons or less per acre, and the average grade was 61 per cent U. S. No. 1, 36 per cent U. S. No. 2 and 3, and 3 per cent culls.



There are many factors to take into account in getting good yields. Climate, soil, cultural methods, and disease preventions are important. The following comments, however, are intended to deal particularly with the nutrition of the crop, a factor which every grower realizes is a very important one.

Briefly, the tomato crop, or any other crop for that matter, should be fed what it needs—when it needs it. The tomato is a heavy feeder. That nitrogen, phosphates, and potash are

100 lbs. 11-48-0, 37 lbs. muriate of potash. Check Plot. Same as Plot 1 plus 325 lbs. muriate of potash.
Test Conducted by Chemistry Department, Ontario Agricultural College, 1938.

needed in substantial amounts is shown by Chart 1.

There are few crops requiring greater amounts of plant food than tomatoes, if high yields are expected. This is particularly true of its nitrogen and potash needs. These two elements are somewhat opposite in their effects on quality, especially if they are out of balance. Excess nitrogen produces stalk and foliage, somewhat at the expense of well-ripened, high-quality fruit. Moreover, delayed maturity is apt to accompany too great supplies of nitrogen. On the other hand, adequate nitrogen must be provided for normal development of foliage, for it is in the leaves that the sugars and starches are metabolized.

Potash is often called the "quality" factor in fruit and vegetables. Resistance to disease, reduction in prevalence of "leather-end," more uniform shape of fruit, higher ascorbic acid content, and high yields are associated with adequate potash feeding. Tomatoes are potash-hungry plants and soils must be naturally high in potash or potash must be added if good yields of high-quality fruit are obtained.

The influence of potash on tomato quality was demonstrated on the Smart Brothers farm at Collingwood, Ontario, in 1938. Not only were yields improved by addition of potash, but of equal significance was the reduction of "leather-end," as shown in the accompanying photograph. A report of this test was prepared by R. J. Bryden of the Ontario Agricultural College, who had this to say respecting the incidence of "leather-end":

> "On this 40-acre field in 1937 there was at least 30 per cent leather-end. This year, 1938, with a 2-12-10 fertilizer replacing the 2-12-6 analysis, the leather-end was reduced to about 15 per cent. On the acre which received the extra potash in addition to the 2-12-10 mixture, there was no leather-end whatsoever. In other words, in this instance the additional potash proved its worth in assisting in the production of high-quality tomatoes."

Phosphates, while required in smaller amounts than either nitrogen or potash, are no less important. They promote vigorous root growth and thus should be in ample supply for the young plant when transplanted into the field. Phos-

phates in the transplanting solution, as well as fertilizers high in phosphates placed in bands near the plant, have been found very effective. Since most soils fix a portion of the phosphates into insoluble forms, more than is actually required by the plant should be applied.

The amounts of nitrogen, phosphates, and potash required in feeding the tomato crop will depend on: (a) the native fertility of the soil; (b) the amount of manure applied; (c) the quantity of residue or fertilized cover crop plowed down; and (d) the yield of tomatoes expected.

Properly conducted soil tests offer cheap and effective guidance in choosing the kind and amounts of fertilizer to employ.

When do tomato plants feed? The answer is shown in Chart 2.

Most of the nutrients are taken in by the plant during the third month of growth. At this stage the root system is well developed, both laterally and in depth. Thus, it seems reasonable that the plant food should be in the area of greatest root development. This thought has led to experiments in which the bulk of the fertilizer has been placed at greater depth than was formerly practiced. Ordinarily this deeper placement is accomplished by means of a device attached to the tractor-plow, which places the fertilizer in a band on the bottom of each furrow.

Very good results have been reported from this method of applying plant food for tomatoes, corn, and several other crops. Some of the benefits of this method of application might be enumerated:

(1) Applied in this way the fertilizer is always in a moisture area and even in dry weather the plants are able to absorb their nutrients, thus reducing drouth damage.

(2) Greater amounts of fertilizer may be employed without damage to the plants.

(3) Fixation of phosphates is reduced since there is little mixing of the soil with the phosphate materials.

(4) Both yield and quality of tomatoes have been materially enhanced over those resulting from the conventional method of fertilizer application.

Fertilizers applied in this way do not entirely take the place of shallower applications at planting time. About three-fourths of the fertilizer may be placed in the bottom of the furrow and the remainder applied in the conventional way. The surface application should be moderate in nitrogen and potash, but high in phosphate, while that placed deeper should be high in both nitrogen and potash and medium in phosphate.

In low organic soils a 10-10-10 for plowing down at rates varying from 500 to 1,000 pounds per acre has been employed to good advantage. In the higher organic soils, or where manure has been applied, an 0-10-10 or a 5-10-10, at the same rates per acre, should give good returns. These rates may

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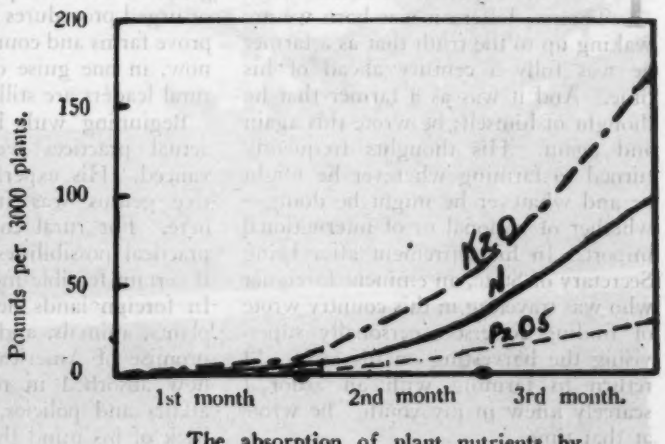


The absorption of plant nutrients by 3000 tomato plants at various growth stages.

An unusual view of Monticello on Bicentennial Day.

Thomas Jefferson Far-Sighted Farmer

By C. B. Sherman

U. S. Department of Agriculture, Washington, D. C.

TWO HUNDRED YEARS after Thomas Jefferson was born we are waking up to the truth that as a farmer he was fully a century ahead of his time. And it was as a farmer that he thought of himself; he wrote this again and again. His thoughts frequently turned to farming wherever he might be and whatever he might be doing—whether of national or of international import. In his retirement after being Secretary of State, an eminent foreigner who was traveling in this country wrote of finding Jefferson personally supervising the harvesting on his farm. "I return to farming with an ardor I scarcely knew in my youth," he wrote at that time.

Not only was Jefferson a farmer of far-seeing practices but he made suggestions, outlined plans, recommended or urged procedures and facilities to improve farms and country life which even now, in one guise or another, agricultural leaders are still trying to put over.

Beginning with his own farm, his actual practices were amazingly advanced. His experimental and inventive genius was frequently at work here. For rural communities he saw practical possibilities for rounded lives if certain feasible measures were taken. In foreign lands he was interested in plants, animals, and methods that had promise of American use. No matter how absorbed in national and world affairs and policies, he carried in the back of his mind the needs and potentialities of his farm at Monticello and American rural life in general.

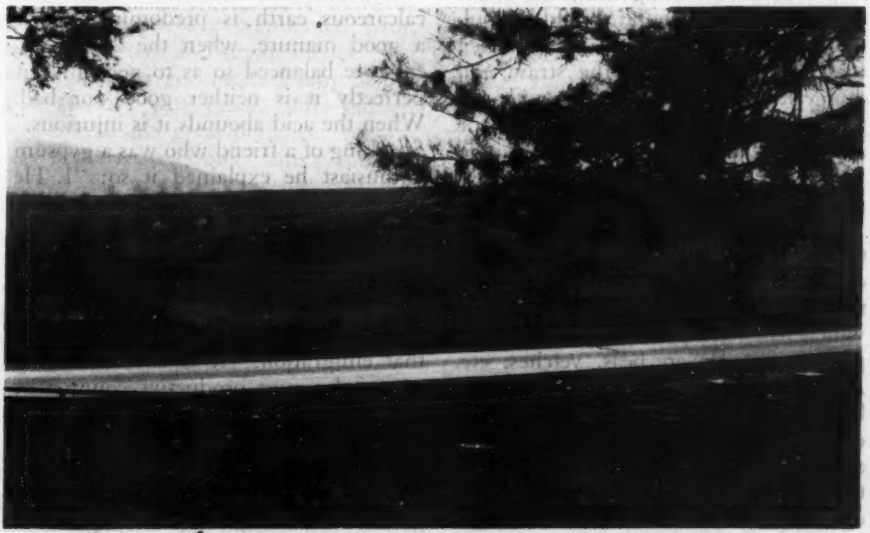
All these things are clearly demonstrated in his letters, farm and garden books, records, and papers, in his own handwriting. They have been available to scholars for a long time. When this bicentennial year is over, perhaps the gist of them will be known to all serious agricultural students and local leaders.

Fundamental to good farming, he believed, was care of the soil. He experimented with horizontal or contour plowing to keep the red soil of his Albemarle County farms in place. It was naturally given to gullying during heavy rains. In 1817 he wrote minutely of just how this kind of plowing on hillsides was done and why. But for those only generally interested: "We now plow horizontally following the curvature of the hills and hollows on dead level, however crooked the lines may be. Every furrow thus acts as a reservoir to receive and retain the waters; scarcely an ounce of soil is now carried away. . . . In point of beauty nothing can exceed that of our waving lines and rows winding along the face of our hills and valleys."

No wonder the present local is called the Thomas Jefferson Soil Conservation District. Operating on democratic principles, the members formulate their own conservation ordinances that have the force and effect of law. The will of the majority of farmers in the 1940's now sets forms of land use and cultivation that are not unlike those practiced by Jefferson—but by few others—100 years ago. Remains of some of his terracing are still found even though woods have now grown over them.

Crop rotation was practiced at Monticello. After 10 years of absence in the service of his country, he returned to his beloved fields to find that "the ravages of the overseers have brought on them a degree of degradation far beyond what I had expected." He worked out and began a rotation that would take from three to six years to get completely underway. For it he divided his farm into six fields. The rotation was: first year, wheat; second year, corn, potatoes, and peas; third, rye or wheat; fourth and fifth, clover; sixth, folding and buckwheat dressings.

In easier phrase he wrote to George Washington, "Good husbandry with us consists in abandoning Indian corn and tobacco, tending small grain, some red clover following, and endeavoring to have, while the lands are at rest, a spon-



Traces of the contouring done under Jefferson's direction may still be seen.

This terracing was done on his farm during Jefferson's time.

taneous cover of white clover. I do not present this as a culture judicious in itself, but as good in comparison with what most people there pursue."

Jefferson was concerned about plant food. Dung was studied and is the subject of frequent notation. At one time he advocates "manures, plaster, green-dressings, fallows, and other means of ameliorating the soil." "Before folding, the ground should be coultered and covered with straw, then folded one week, and the straw and dung immediately turned in with the great plough." Exact notes were made as to quantity of dung to be expected under specified conditions and the best methods of storing and applying it.

"As it is not to be believed that spontaneous herbage is the only or best covering during rest, so may we expect that a substitute for it may be found which will yield profitable crops. Such perhaps are clover, peas, vetches, etc. A rotation may then be found, which by giving time for the slow influence of the atmosphere, will keep the soil in a constant signal state of fertility. But the advantage of manuring is that it will do more in one year than the atmosphere would require several years to do, and consequently enables you so much oftener to take exhausting crops from the soil."

Marl came in for its share of attention and he was especially interested in the broom which flourished at Monticello, because he believed it absorbed a fertility from the air and carried it to the soil.

Gypsum was studied: "When the calcareous, earth is predominant it is a good manure, when the 2. ingredients are balanced so as to neutralize it perfectly it is neither good nor bad. When the acid abounds it is injurious." Speaking of a friend who was a gypsum enthusiast he explained it so: "1. He began poor, and has made himself tolerably rich by his farming alone. 2. The County of Loudon, in which he lives, had been so exhausted and wasted by bad husbandry that it began to depopulate . . . Binns' success has stopped that emigration. It is now becoming one of the most productive counties of the State, and the price given for the lands is multiplied manifold."

At one time or another Jefferson planted and raised all the practicable grains. In one year, according to accounts, he had planted on his farm 32

Soil in Albemarle County is given to erosion when neglected.

vegetables and 22 crops. He liked to bring in new varieties or crops, try them out, and report on them. If his location was not suitable he had them tried elsewhere—by William Drayton in South Carolina, for instance. Among the many thus experimented with were millet, upland rice, Siberian barley, and vetch. Various berries and melons were also cultivated experimentally. Useful trees were experimented with, as the cork oak and sugar maples. He tested seed for germination long before this practice was usual. His garden was one of his great delights.

When representing this country abroad he sent back seeds, cuttings, and observations on many subjects including vineyards, fruit cultivation (especially the olive), rice milling, production of silk, and manufacture of flour. He wrote that his curiosity on the fields and farms prompted the foreigners to consider him either very foolish or very wise.

He worked for the protection of the crops he planted. He brought in or developed hardy varieties to resist pests. He sowed late if that would get ahead of them. He burned stubble to destroy the Hessian fly and he urged a study of the life history of this fly the better to understand and combat it.

His observations were exact and were diligently recorded: "On an average of seven years I have found our snows amount in the whole to fifteen inches depth, and to cover the ground fifteen days; these, with the rains, give us four feet of water in the year."

Anyone who has visited Monticello is familiar with Jefferson's inventive turn of mind. Most of his inventions were of a decidedly practical nature and he took great pains to make them generally available.

In farm machinery his improvement of the moldboard plow is best known. His drawings and descriptions of the changes and his directions for building the improved plow are most explicit. He published regarding the improved moldboard in this country and in France and Great Britain, and urged further improvements. His writings had great weight. He worked in his basement shop to improve many pieces of equipment including the seed drill, the hemp brake, and the threshing machine.

Jefferson was interested in having

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Controlling Erosion In South Carolina

By Jack Wooten

Assistant Director of Information, Farm Credit Administration, Columbia, S. C.

DURING the past two years South Carolina has produced record crops. It has taken work and plenty of it to overreach its goals, but it has taken something else—care of the soil.

There are certain sections in the Palmetto State which are very hilly. The land washes easily. And when the rains come, the surface of the earth is worn away and producing soil is gone forever. At long last, rich land becomes poor and useless. If the farmer remains on this type of land, he ceases to be a farmer and becomes a man of drudgery who does well to eke out a bare living.

In many instances the farmer moves to another farm, leaving the badly eroded place to its fate—an abandoned piece of land so worthless that it becomes idle land, completely unproductive. Just as pathetic as a man with brains, talent, and personality who throws his life away by sitting around the village store, whittling on a piece of wood and letting the chips fall on the ground to be mashed in the sand or clay or raked up and burned!

Had it not been for erosion control measures practiced by the South Carolina farmers during the past decade, the record food and feed crops so essential to the war effort would never have been attained. Soldiers need much more nourishment while they are training and fighting for the freedom of the earth. Those on the home front require more meat and vegetables, too. With the increase in livestock production throughout the United States, more feed crops are necessary. These things

Dr. Bennett observes cattle grazing on a 3-year old stand of kudzu. This land was very steep, rocky, and badly eroded.

A permanent strip of lespedeza sericea along the critical portion of a cultivated field and next to the woodland edge.

simply cannot be realized on eroded land.

There has been much progress in conservation of the soil through conquering this devastating erosion. Recently, H. H. Bennett, Chief of the U. S. Soil Conservation Service, whose organization has been a Godsend to the farmers of this country, declared that the outlook for America's productive cropland is brighter today than it has been for generations. "But," he warned, "we can still lose the fight against soil erosion and exhaustion unless we apply the principles of good land use and modern agricultural methods to our farming operations."

He was speaking for South Carolina, as well as the rest of the nation. In his interview he drew a comparison between farmers who exploit and neglect their land and industrial firms which fail to keep their buildings and equipment in repair.

"Everybody knows," he said, "that a business corporation which operated haphazardly wouldn't be in business very long. The machinery would soon wear out. Soil wears out, too—the humus and the plant nutrients are exhausted by over-cropping. Erosion, as a result of improper farming methods, washes away millions of tons of top soil every year."

One trouble with South Carolina farmers years ago was that they lacked full understanding as to what their land resources were. Terracing was unknown to many of them. They did not know the meaning of crop rotations. Year after year cotton was planted on the same land. Soil-building crops (with the possible exception of cowpeas) were something they had heard about but had never planted. Kudzu, which is now recognized as one of the best perennials to stop erosion, was just a vine that was used to run up a trellis to shade the front porch or to hang unmajestically on an outhouse. They had seen volunteer common lespedeza in the pastures, but had looked on it as just another grass. All grasses were common enemies, not the friends a few soil conservation farmers considered them to be. They did not pay any attention to the control of erosion by water. It was just something that had to be. It was God's will that the rains came and washed their top soil away. It was Providence who willed that their productive land should be interspersed

These loblolly pines were planted in 1935 on steep and badly eroded land. Dr. Bennett is measuring a tree which is six inches in diameter.

with unsightly gullies—narrow ravines which remained after the good earth was gone forever.

Tractor farming was impossible under these conditions. Other farm machinery was useless. About the only thing that could be used to cultivate this badly eroded land was the plow, and on many farms even this was dangerous to both the man and his mule.

Even though this farm machinery could have been used advantageously, farmers on this eroded land could not afford to buy it. How could they when so much of their productive soil had been washed away?

But by the time World War II had started thousands of farmers in South Carolina were not handicapped by eroded soil. They had remedied the situation. They had learned how to maintain this soil. They had increased crop yields of food and other important crops. They had found out how to save themselves time, labor, and money through conservation farming.

During the last war farmers did not pay any attention to soil conservation methods. When the cry for more food reached their ears, they got out and started planting the necessary crops on just any kind of land. They cleared their woods, dug up the stumps, and unmindful of building up the soil, planted crops which yielded very little in proportion to the amount of time and money they put into cultivating the land. As a result their farms began to wash away. The trees, which had served as a bulwark for these farms from the water, were gone. Nothing was left to hold back the flow which came through and washed their land away.

Production during World War II is different. Over a period of years the erosion has been stopped. Contour and strip-crop farming have helped to improve the soil. Land has become more productive through the planting of soil-building crops. By learning what their land resources were and what was needed to be done to protect them against abuse and how to do it resulted in the record crops which have been produced since Pearl Harbor.

What are some of the things which have been done to stop this mass erosion and improve the land so that our farmers in the Palmetto State are able to do their part in producing so much food to help in the war effort, and, at the same time, keep their farms in a high state of cultivation so that they can continue to produce an abundance of food and feed in the postwar period?

You've probably heard the antiquated joke about the man biting the dog. If a dog bites a man, nobody thinks very much about it, unless the canine has hydrophobia; but if the man bites the dog, then it is news. Well, that's comparable to what really happened in Lee and Kershaw counties, South Carolina.

It all came about when many changes took place on farms in this area as a result of a soil conservation and "stop that erosion" program. Back there, not so many years ago, cotton farmers were spending money, toiling from sun to sun, and losing plenty of sleep fighting grass. And then through the efforts of the Soil Conservation Districts, these folks who had been at war with grass

for a lifetime actually purchased 20 tons of grass seed. That was even more news than a man biting a dog, and it so happened that these farmers did not bite off more than they could chew!

Purchase of the grass seed was just the beginning. These same farmers—158 in number—prepared the land, limed and fertilized it well before sowing the seed.

Idle land was mentioned earlier in this article. Here is a striking example of how it was put into production to aid in the nation's Food-for-Freedom program. The seed purchased by the farmers was Dallis grass, and it was mixed with white Dutch clover and annual lespedeza before being sown for permanent pasture on low, moist land. This land, for the most part, had been idle because it would not grow ordinary crops of cotton, corn, and grain. The proof of the pudding that this practice was successful lies in the fact that at the present time cattle are grazing on these pastures—cattle that necessarily would have been placed on land suitable for food production. Meat is greatly needed during these war times, and every acre of idle land put into pastures will help tremendously in meeting this demand.

Another change on the farms in these two counties and the 44 others in South Carolina is the switch from "straight-row" to "crooked-row" farming. Here again land erosion met a powerful offense with which it could not compete. This "crooked-row" or contour farming took place on the more sloping lands after terraces had been built by the farmers on the terrace lines surveyed by the Soil Conservation Districts.

In all sections of the State two perennials are growing regularly on farms. These are kudzu and lespedeza sericea. Both of these are used for the production of hay or as a grazing crop and are also very effective in controlling erosion on steep areas. Kudzu is also a great crop for bringing marginal land into production. On the average eroded farm, with proper land preparation, fertilization, and cultivation, this takes around three years. In the case of land where the gullies are deep and wide and where the acreage seems practically hopeless, it often takes six to ten years to get it to the point where it can be used for some form of production.

The value of both kudzu and sericea

Sericea lespedeza hay is being raked after it has partially cured. Note the arrangement of permanent strips.

lespedeza was proved by observations made last June at the Southern Piedmont Experiment Station at Watkinsville, Georgia. During the month the rainfall totaled 8.59 inches on the 11 per cent slope plots on Cecil clay (red) loam, where the run-off for fourth-year kudzu amounted to only .8 per cent and soil losses none. For fourth-year sericea the run-off was 7.9 per cent and soil losses .04 tons per acre. For fourth-year volunteer Kobe lespedeza, the run-off was 11.6 per cent and soil .33 of a ton per acre. For first-year Kobe lespedeza following oats, 41.9 per cent run-off was noted and 3.01 tons of soil per acre were lost. After three years of Kobe lespedeza, stubble mulch turned under, the run-off was 43.4 per cent and soil losses were 12.9 tons per acre. It was also observed that where cotton had been planted for four years in succession, the run-off was 43.1 per cent and soil losses were 15.32 tons per acre. One can readily see from these figures how these two perennials "hold that line against erosion and soil losses."

Rotations and Cover Crops

Better rotations with full use of cover crops such as Austrian winter peas, annual lespedezas (Kobe, Korean, and common), crotalaria, oats, rye, and vetch have played a most important part in conservation farming. The plantings of these crops have not only enriched the land but have provided a real incentive for farmers to keep down erosion so that their land may be as productive as possible. The more they produce, the higher will be the income from their endeavors. Farming is hard work and the man who uses conservation measures according to the topography and soil types on his farm deserves to make a decent income.

Fertilizers for poor land, as for good land, cost money. But if soil-buiding crops are planted and advantageously supplied with lime, phosphate, and potash, they will cut down the nitrogen bill and at the same time save this necessary ingredient for abundant production for war and civilian needs.

According to R. Y. Bailey, Chief of the Regional Agronomy Division of the Soil Conservation Service, Spartanburg, South Carolina, fertilization of perennial legumes has played a very important part in their use.

"Although we have never had any very striking results from the application of lime for either sericea or kudzu, most of us feel that sufficient lime to supply calcium and to maintain a soil reaction of 5.5 or better will be beneficial. Both of these crops have responded to application of phosphate and, on many soils, potash. We usually recommend approximately 600 pounds of superphosphate per acre when sericea is planted and about the same amount as a broadcast application in the early spring of the third growing season of kudzu. Of course, we recommend liberal fertilizing of kudzu in the rows the first year. Where the row spacing that we recommend is used, 200 pounds of superphosphate or complete fertilizer and a ton or two of manure per acre give a very high concentration in the rows.

"On soils where potash is needed by cotton or other similar crops, I believe that at least 100 pounds of muriate of potash per acre should be applied along with 600 pounds of superphosphate for both sericea and kudzu.

"We do not know exactly what maintenance requirements of these crops will be. We have generally recommended that the fertilizer treatment given at planting time for sericea and that given kudzu at the beginning of the third growing season be repeated about once every three years."

In the face of necessary curtailments, farmers are being urged to carefully plan their farm programs and to seek the guidance of those who have studied proper conservation measures. Farmers who have used these practices have found from experience that soil conservation measures, properly applied, increase agricultural production and reflect themselves in a sound, productive program.

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PICTORIAL

No welcome could be more sincere.

Above: The back-breaking method of reaping with sickles is used by these farmers in Sicily.

Official Office of War Information Photos

Below: Livestock are used to trample the wheat from the chaff on a farm in northern Sicily.

Above: The hand method is difficult, but it gets results. Here the farmers flail the wheat.

Official Office of War Information Photos

Below: In northwestern Sicily the faithful mule is used to carry wheat to the threshers.

Above: This Sicilian farmer was very fortunate. He had a threshing machine to help his workers.

Official Office of War Information Photos

Below: Unmindful of the loads they carry, happy Sicilians start home with the ground grain.

The Editors Talk

Thanksgiving 1944

"There is a tradition that in the planting of New England, the first settlers met with many difficulties and hardships, as is generally the case when a civilized people attempt to establish themselves in a wilderness country.

"Being piously disposed, they sought relief from heaven by laying their wants and distresses before the Lord, in frequent set days of fasting and prayer. Constant meditation and discourse on these subjects kept their minds gloomy and discontented; and like the children of Israel, there were many disposed to return to that Egypt which persecution had induced them to abandon.

"At length, when it was proposed in the assembly to proclaim another fast, a farmer of plain sense rose, and remarked, that the inconveniences they suffered, and concerning which they had so often wearied heaven with their complaints, were not so great as they might have expected, and were diminishing every day, as the colony strengthened; that the earth began to reward their labor, and to furnish liberally for their subsistence; and above all, that they were there in the full enjoyment of liberty, civil and religious.

"He, therefore, thought it would be more becoming the gratitude they owed to the Divine Being, if, instead of a fast, they should proclaim a thanksgiving. His advice was taken, and from that day to this they have, in every year, observed circumstances of public felicity sufficient to furnish employment for a Thanksgiving Day, which is therefore constantly ordered and religiously observed."

Thus wrote Benjamin Franklin more than 150 years ago. The origin and purpose of the day so ably recounted by Franklin will be a sound basis for the reflections with which we approach Thanksgiving 1944.

Thanksgiving is a personal day and as such will be celebrated by each of us in appreciation of our individual blessings. But our minds will not stop there, for no person is sufficient unto himself. Our thoughts will go on to include our home, our communities, our country, and finally the other countries of the world. There must be an added solemnity this year, but lest there be despair over some of the things which will come to mind, let us not forget to hark back to the first Thanksgiving, held by a people in the midst of infinite hardships, but with a faith in themselves and in their strength.

Let us not forget that the earth has again rewarded our labor, to furnish liberally not only for our subsistence but for the subsistence of the oppressed peoples of the world. But most of all, let us not forget that our future is still ours to plan.

"For the preservation of our way of life from the threat of destruction; for the unity of spirit which has kept our Nation strong; for our abiding faith in freedom; and for the promise of an enduring peace, we should lift up our hearts in thanksgiving," said President Roosevelt in his proclamation of Thanksgiving Day, 1944.

Dr. H. H. Zimmerley

The passing of an outstanding agricultural scientist is always a distinct loss, not only to the nation in which he lived, but to the betterment of world civilization, for the results of agricultural research are available for the benefit of all peoples. Particularly will this loss be felt in the sudden death of Dr. H. H. Zimmerley, Director of the Virginia Truck Experiment Station, Norfolk, Virginia, on October 15, 1944.

Dr. Zimmerley was internationally known for his contributions in a field of science which World War II has lifted out of a classification of general interest into one of prominence—the relationship of soils to human nutrition. This country, with its history of more than ample food supplies, was startled during the first days of selective service at the number of rejections attributed to malnutrition. Impressed upon us as never before has been the fact that physical welfare depends not only upon the kinds of food we eat, but upon the soil and husbandry utilized in the growing of such foods. In the refinements of the study of nutrition which will be emphasized in research to come, the foresighted work of Dr. Zimmerley on such problems as the influence of soil reaction on the growth and chemical composition of certain vegetable crops, the nutrition of vegetable crops, and crop breeding will prove of inestimable value.

Scientific research is one thing. Putting its findings to practical use is another. Dr. Zimmerley was widely known for his ability to adapt scientific knowledge of soils and vegetable growing to practical conditions. He probably did more to bring these two phases of our agriculture to the growers than any other man in the world. Who can place a value on this service, particularly in the light of the success with which this war's huge food production goals have been met?

Only 54 years of age, Dr. Zimmerley could ill be spared at this time. His imprint on the advancement of agriculture will prove a lasting memorial.

America

"The land of America is covered with the aftermath of the corn harvest. Shocks follow the sweep and curve of the hills, the dip of the valleys. Stalks stand like spectres upon the fields. A European, homesick for his own country, thinks of vineyards or little farms. An American, lonely in a foreign land, sees fields of corn. He sees pale rows across the earth in spring, and solid stands of corn in summer; but most of all he sees dim gold shocks upon his homeland in the fall. He sees bright little yellow pools at the foot of these shabby shocks, as solitary figures husk the corn in the first cold of winter. He sees corn-filled cribs, and ears in the shelter of barns. And seeing all these, he will hold fast to them; for he knows these will endure, when empires have fallen and the quiet of the battlefield is broken only by ghosts."

—CLARE LEIGHTON, in *Give Us This Day*. Reynal & Hitchcock.

Farm Prices of Farm Products*

	Cotton Cents per lb.	Tobacco Cents per lb.	Potatoes Cents per bu.	Sweet Potatoes Cents per bu.	Corn Cents per bu.	Wheat Cents per bu.	Hay Dollars per ton	Cottonseed Dollars per ton	Truck Crops
1910–14 Average	12.4	10.4	69.6	87.6	64.8	88.0	11.94	21.59	....
1920	32.1	17.3	249.5	175.7	144.2	224.1	21.26	51.73	....
1921	12.3	19.5	103.8	118.7	58.7	119.0	12.96	22.18	....
1922	18.9	22.8	96.7	104.8	58.5	103.2	11.68	35.04	....
1923	26.7	19.0	84.1	104.4	80.1	98.9	12.29	43.69	....
1924	27.6	19.0	87.0	137.0	91.2	110.5	13.28	38.34	....
1925	22.1	16.8	113.9	171.6	99.9	151.0	12.54	35.07	....
1926	15.1	17.9	185.7	156.3	69.9	135.1	13.06	27.20	....
1927	15.9	20.7	132.3	114.0	78.8	120.5	12.00	28.56	....
1928	18.6	20.0	82.9	112.3	89.1	113.4	10.63	37.70	....
1929	17.7	18.6	93.7	118.4	87.6	102.7	11.56	34.98	....
1930	12.4	12.9	124.4	115.8	78.0	80.9	11.31	26.25	....
1931	7.6	8.2	72.7	92.9	49.8	48.8	9.76	17.04	....
1932	5.8	10.5	43.3	57.2	28.1	38.8	7.53	9.74	....
1933	8.1	12.9	66.0	59.4	36.5	58.1	6.81	12.32	....
1934	12.0	17.1	68.0	79.1	61.3	79.8	10.67	26.12	....
1935	11.6	16.1	49.4	73.9	77.4	86.4	10.57	35.56	....
1936	11.7	17.2	99.6	85.3	76.7	96.0	8.93	31.78	....
1937	11.1	19.9	88.3	91.8	94.8	107.1	10.36	30.24	....
1938	8.3	17.2	55.5	76.9	49.0	66.1	7.55	21.13	....
1939	8.7	13.6	68.1	75.4	47.6	63.6	6.95	22.17	....
1940	9.6	15.1	70.7	85.2	59.0	73.9	7.62	24.31	....
1941	13.3	19.1	64.6	94.4	64.3	84.0	8.10	35.04	....
1942	18.51	28.3	110.0	108.3	79.5	101.8	10.05	44.42	....
1943									
September	20.20	37.2	134.0	231.0	109.0	130.0	12.90	51.90	....
October	20.28	41.8	128.0	196.0	107.0	135.0	13.70	52.50	....
November	19.40	44.5	133.0	177.0	105.0	137.0	14.50	52.50	....
December	19.85	42.4	135.0	188.0	111.0	143.0	15.20	52.60	....
1944									
January	20.15	41.5	141.0	202.0	113.0	146.0	15.70	52.80	....
February	19.93	25.1	139.0	211.0	113.0	146.0	15.90	52.60	....
March	19.97	21.9	137.0	220.0	114.0	146.0	16.00	52.70	....
April	20.24	23.8	137.0	229.0	115.0	147.0	16.20	52.50	....
May	19.80	37.2	134.0	236.0	115.0	147.0	16.10	52.50	....
June	20.16	49.2	125.0	233.0	115.0	143.0	15.00	52.80	....
July	20.32	45.0	138.0	230.0	117.0	139.0	13.90	53.00	....
August	20.15	39.3	159.0	258.0	117.0	135.0	14.30	53.20	....
September	21.02	42.9	147.0	219.0	116.0	135.0	14.70	52.30	....

Index Numbers (1910-14 = 100)

1920	259	166	358	201	223	255	178	240	....
1921	99	187	149	136	91	135	109	103	....
1922	152	219	139	120	90	117	98	162	....
1923	215	183	121	119	124	112	103	202	....
1924	223	183	125	156	141	126	111	177	150
1925	178	161	164	196	154	172	105	162	153
1926	122	172	267	178	108	154	109	126	143
1927	128	199	190	130	122	137	101	132	121
1928	150	192	119	128	138	129	89	175	159
1929	143	179	135	135	135	117	97	162	149
1930	100	124	179	132	120	92	95	122	140
1931	61	79	104	106	77	55	82	79	117
1932	47	101	62	65	43	44	63	45	102
1933	65	124	95	68	56	66	57	57	105
1934	97	164	98	90	95	91	89	121	104
1935	94	155	71	84	119	98	89	165	126
1936	94	165	143	97	118	109	75	147	113
1937	90	191	127	105	146	122	87	140	122
1938	67	165	80	88	76	75	63	98	101
1939	70	131	98	86	73	72	58	103	109
1940	78	145	102	97	91	84	64	126	121
1941	107	184	93	108	99	95	68	162	145
1942	149	272	158	124	123	116	84	206	199
1943									
September	163	358	193	264	168	148	108	240	311
October	164	402	184	224	165	153	115	243	264
November	156	428	191	202	162	156	121	243	254
December	160	408	194	215	171	163	127	244	208
1944									
January	163	399	203	231	174	166	131	245	231
February	161	241	200	241	174	166	133	244	204
March	161	211	197	251	176	166	134	244	191
April	163	229	197	261	177	167	136	243	184
May	160	358	193	269	177	167	135	243	217
June	163	473	180	266	177	163	126	245	245
July	164	433	198	263	181	158	116	245	236
August	163	378	228	295	181	153	120	246	253
September	170	413	211	250	179	153	123	242	239

Wholesale Prices of Ammoniates

	Nitrate of soda per unit N bulk	Sulphate of ammonia bulk per unit N	Cottonseed meal S. E. Mills per unit N	Fish scrap, dried 11–12% ammonia, 15% bone phosphate, f.o.b. factory, bulk per unit N	Fish scrap, wet acidulated 6% ammonia, 3% bone phosphate, f.o.b. factory, bulk per unit N	Tankage 11% ammonia, 15% bone phosphate, f.o.b. Chicago, bulk, per unit N	High grade ground blood, 16–17% ammonia, Chicago, bulk, per unit N
1910–14	$2.68	$2.85	$3.50	$3.53	$3.05	$3.37	$3.52
1922	3.04	2.58	6.07	4.66	3.54	4.75	4.99
1923	3.02	2.90	6.19	4.83	4.25	4.59	5.16
1924	2.99	2.44	5.87	5.02	4.41	3.60	4.25
1925	3.11	2.47	5.41	5.34	4.71	3.97	4.75
1926	3.06	2.41	4.40	4.95	4.15	4.36	4.90
1927	3.01	2.26	5.07	5.87	4.35	4.32	5.70
1928	2.67	2.30	7.06	6.63	5.28	4.92	6.00
1929	2.57	2.04	5.64	5.00	4.69	4.61	5.72
1930	2.47	1.81	4.78	4.96	4.15	3.79	4.58
1931	2.34	1.46	3.10	3.95	3.33	2.11	2.46
1932	1.87	1.04	2.18	2.18	1.82	1.21	1.36
1933	1.52	1.12	2.95	2.86	2.58	2.06	2.46
1934	1.52	1.20	4.46	3.15	2.84	2.67	3.27
1935	1.47	1.15	4.59	3.10	2.65	3.06	3.65
1936	1.53	1.23	4.17	3.42	2.67	3.58	4.25
1937	1.63	1.32	4.91	4.66	3.65	4.04	4.80
1938	1.69	1.38	3.69	3.76	3.17	3.15	3.53
1939	1.69	1.35	4.02	4.41	3.12	3.87	3.90
1940	1.69	1.36	4.64	4.36	3.35	3.33	3.39
1941	1.69	1.41	5.50	5.32	3.27	3.76	4.43
1942	1.74	1.41	6.11	5.77	3.34	5.04	6.76
1943							
September	1.75	1.42	6.30	5.77	3.34	4.86	6.71
October	1.75	1.42	6.29	5.77	3.34	4.86	6.71
November	1.75	1.42	6.29	5.77	3.34	4.86	6.71
December	1.75	1.42	7.39	5.77	3.34	4.86	6.71
1944							
January	1.75	1.42	7.40	5.77	3.34	4.86	6.71
February	1.75	1.42	7.40	5.77	3.34	4.86	6.71
March	1.75	1.42	7.61	5.77	3.34	4.86	6.71
April	1.75	1.42	7.50	5.77	3.34	4.86	6.71
May	1.75	1.42	7.81	5.77	3.34	4.86	6.71
June	1.75	1.42	7.81	5.77	3.34	4.86	6.71
July	1.75	1.42	7.81	5.77	3.34	4.86	6.71
August	1.75	1.42	7.81	5.77	3.34	4.86	6.71
September	1.75	1.42	7.81	5.77	3.34	4.86	6.71
Index Numbers (1910-14 = 100)							
1922	113	90	173	132	117	140	142
1923	112	102	177	137	140	136	147
1924	111	86	168	142	145	107	121
1925	115	87	155	151	155	117	135
1926	113	84	126	140	136	129	139
1937	112	79	145	166	143	128	162
1928	100	81	202	188	173	146	170
1929	96	72	161	142	154	137	162
1930	92	64	137	141	136	112	130
1931	88	51	89	112	109	63	70
1932	71	36	62	62	60	36	39
1933	59	39	84	81	85	97	71
1934	59	42	127	89	93	79	93
1935	57	40	131	88	87	91	104
1936	59	43	119	97	89	106	121
1937	61	46	140	132	120	120	122
1938	63	48	105	106	104	93	100
1939	63	47	115	125	102	115	111
1940	63	48	133	124	110	99	96
1941	63	49	157	151	107	112	126
1942	65	49	175	163	110	150	192
1943							
September	65	50	180	163	110	144	191
October	65	50	180	163	110	144	191
November	65	50	180	163	110	144	191
December	65	50	211	163	110	144	191
1944							
January	65	50	211	163	110	144	191
February	65	50	211	163	110	144	191
March	65	50	217	163	110	144	191
April	65	50	214	163	110	144	191
May	65	50	223	163	110	144	191
June	65	50	223	163	110	144	191
July	65	50	223	163	110	144	191
August	65	50	223	163	110	144	191
September	65	50	223	163	110	144	191

Wholesale Prices of Phosphates and Potash**

	Superphosphate Baltimore, per unit	Florida land pebble 68% f.o.b. mines, bulk, per ton	Tennessee phosphate rock, 75% f.o.b. mines, bulk, per ton	Muriate of potash bulk, per unit, c.i.f. Atlantic and Gulf ports	Sulphate of potash in bags, per unit, c.i.f. Atlantic and Gulf ports	Sulphate of potash magnesia, per ton, c.i.f. Atlantic and Gulf ports	Manure salts bulk, per unit, c.i.f. Atlantic and Gulf ports[1]	Kainit, 20% bulk, per unit, c.i.f. Atlantic and Gulf ports[1]
1910–14	$0.536	$3.61	$4.88	$0.714	$0.953	$24.18	$0.657	$0.655
1922	.566	3.12	6.90	.632	.904	23.87	....	.508
1923	.550	3.08	7.50	.588	.836	23.32	....	.474
1924	.502	2.31	6.60	.582	.860	23.72	....	.472
1925	.600	2.44	6.16	.584	.860	23.72	....	.483
1926	.598	3.20	5.57	.596	.854	23.58	.537	.524
1927	.535	3.09	5.50	.646	.924	25.55	.586	.581
1928	.580	3.12	5.50	.669	.957	26.46	.607	.602
1929	.609	3.18	5.50	.672	.962	26.59	.610	.605
1930	.542	3.18	5.50	.681	.973	26.92	.618	.612
1931	.485	3.18	5.50	.681	.973	26.92	.618	.612
1932	.458	3.18	5.50	.681	.963	26.90	.618	.591
1933	.434	3.11	5.50	.662	.864	25.10	.601	.565
1934	.487	3.14	5.67	.486	.751	22.49	.483	.471
1935	.492	3.30	5.69	.415	.684	21.44	.444	.488
1936	.476	1.85	5.50	.464	.708	22.94	.505	.560
1937	.510	1.85	5.50	.508	.757	24.70	.556	.607
1938	.492	1.85	5.50	.523	.774	25.17	.572	.623
1939	.478	1.90	5.50	.521	.751	24.52	.570	.670
1940	.516	1.90	5.50	.517	.730	.....	.573	....
1941	.547	1.94	5.64	.522	.779	25.55	.570	....
1942	.600	2.13	6.29	.522	.809	25.74	.205	....
1943								
September	.640	2.00	5.90	.503	.797	26.00	.188	....
October	.640	2.00	5.90	.535	.797	26.00	.200	....
November	.640	2.00	5.90	.535	.797	26.00	.200	....
December	.640	2.00	6.10	.535	.797	26.00	.200	....
1944								
January	.640	2.00	6.10	.535	.797	26.00	.200	....
February	.640	2.00	6.10	.535	.797	26.00	.200	....
March	.640	2.00	6.10	.535	.797	26.00	.200	....
April	.640	2.00	6.10	.535	.797	26.00	.200	....
May	.640	2.00	6.10	.535	.797	26.00	.200	....
June	.640	2.00	6.10	.471	.701	22.88	.176	....
July	.640	2.00	6.10	.503	.797	26.00	.188	....
August	.640	2.00	6.10	.503	.797	26.00	.188	....
September	.640	2.00	6.10	.503	.797	26.00	.188	....
Index Numbers (1910-14 = 100)								
1922	106	87	141	89	95	99	....	78
1923	103	85	154	82	88	96	....	72
1924	94	64	135	82	90	98	....	72
1925	110	68	126	82	90	98	....	74
1926	112	88	114	83	90	98	82	80
1927	100	86	113	90	97	106	89	89
1928	108	86	113	94	100	109	92	92
1929	114	88	113	94	101	110	93	92
1930	101	88	113	95	102	111	94	93
1931	90	88	113	95	102	111	94	93
1932	85	88	113	95	101	111	94	90
1933	81	86	113	93	91	104	91	86
1934	91	87	110	68	79	93	74	72
1935	92	91	117	58	72	89	68	75
1936	89	51	113	65	74	95	77	85
1937	95	51	113	71	79	102	85	93
1938	92	51	113	73	81	104	87	95
1939	89	53	113	73	79	101	87	93
1940	96	53	113	72	77	....	87	....
1941	102	54	110	73	82	106	87	....
1942	112	59	129	73	85	106	84	....
1943								
September	119	55	121	70	84	108	82	....
October	119	55	121	75	84	108	83	....
November	119	55	121	75	84	108	83	....
December	119	55	125	75	84	108	83	....
1944								
January	119	55	125	75	84	108	83	....
February	119	55	125	75	84	108	83	....
March	119	55	125	75	84	108	83	....
April	119	55	125	75	84	108	83	....
May	119	55	125	75	84	108	83	....
June	119	55	125	66	74	95	80	....
July	119	55	125	70	84	108	82	....
August	119	55	125	70	84	108	82	....
September	119	55	125	70	84	108	82	....

Combined Index Numbers of Prices of Fertilizer Materials, Farm Products and All Commodities

	Farm prices*	Prices paid by farmers for commodities bought*	Wholesale prices of all commodities†	Fertilizer materials‡	Chemical ammoniates	Organic ammoniates	Superphosphate	Potash
1922	132	149	141	116	101	145	106	85
1923	142	152	147	114	107	144	103	79
1924	143	152	143	103	97	125	94	79
1925	156	157	151	112	100	131	109	80
1926	145	155	146	119	94	135	112	86
1927	139	153	139	116	89	150	100	94
1928	149	155	141	121	87	177	108	97
1929	146	153	139	114	79	146	114	97
1930	126	145	126	105	72	131	101	99
1931	87	124	107	83	62	83	90	99
1932	65	107	95	71	46	48	85	99
1933	70	109	96	70	45	71	81	95
1934	90	123	109	72	47	90	91	72
1935	108	125	117	70	45	97	92	63
1936	114	124	118	73	47	107	89	69
1937	121	130	126	81	50	129	95	75
1938	95	122	115	78	52	101	92	77
1939	93	121	112	79	51	119	89	77
1940	98	122	115	80	52	114	96	77
1941	122	130	127	86	56	130	102	77
1942	157	152	144	93	57	161	112	77
1943								
September	193	169	150	94	57	160	119	74
October	192	170	150	95	57	160	119	78
November	194	171	150	95	57	160	119	78
December	196	173	150	96	57	171	119	78
1944								
January	196	174	150	96	57	171	119	78
February	195	175	151	96	57	171	119	78
March	196	175	151	97	57	173	119	78
April	196	175	152	96	57	172	119	78
May	194	175	152	97	57	175	119	78
June	193	176	151	95	57	175	119	69
July	192	176	152	96	57	175	119	74
August	193	176	151	96	57	175	119	74
September	192	176	151	96	57	175	119	74

* U. S. D. A. figures.

† Department of Labor index converted to 1910-14 base.

‡ The Index numbers of prices of fertilizer materials are based on original study made by the Department of Agricultural Economics and Farm Management, Cornell University, Ithaca, New York. These indexes are complete since 1897. The series was revised and reweighted as of March 1940 and November 1942.

[1] Beginning with June 1941, manure salts prices are F. O. B. mines, the only basis now quoted.

**** The annual average of potash prices is higher than the weighted average of prices actually paid because since 1926 better than 90% of the potash used in agriculture has been contracted for during the discount period. From 1937 on, the maximum seasonal discount has been 12%.**

REVIEWS

This section contains a short review of some of the most practical and important bulletins, and lists all recent publications of the United States Department of Agriculture, the State Experiment Stations, and Canada, relating to Fertilizers, Soils, Crops, and Economics. A file of this department of BETTER CROPS WITH PLANT FOOD would provide a complete index covering all publications from these sources on the particular subjects named.

Fertilizer

"Commercial Fertilizers Registrants to Date for the Fiscal Year Ending June 30, 45," Dept. of Agr., Sacramento, Calif., FM-91, Sept. 25, 1944.

"Agricultural Minerals Registrants to Date for the Fiscal Year Ending June 30, 1945," Dept. of Agr., Sacramento, Calif., FM-92, Sept. 25, 1944.

"Commercial Fertilizer Sales as Reported to Date for the Quarter Ended June 30, 1944," Dept. of Agr., Sacramento, Calif., Sept. 29, 1944.

"Adjusting Plow-Under Fertilizer Attachment to Apply the Proper Amount of Fertilizer," Dept. of Agron., Purdue Univ., Lafayette, Ind., Mimeo. 55, R. R. Mulvey and A. J. Ohlrogge.

"Phosphates and Their Use," Agron. Dept., Purdue Univ., Lafayette, Ind., Agron. Mimeo 57.

"Effects of Fall Application of Nitrogen Fertilizer on the Soluble Nitrogen and Phosphate Phosphorus Content of Dormant Peach Twigs," Agr. Exp. Sta., Univ. of Ky., Lexington, Ky., Bul. 457, April 1944, C. S. Waltman.

"The Value of Fertilizer for Corn," Agr. Exp. Sta., Miss. State College, State College, Miss., Cir. 120, May 1944, Russell Coleman.

"Fertilizer Inspection, Analysis and Use, 1943," Agr. Exp. Sta., Univ. of Mo., Columbia, Mo., Bul. 480, Aug. 1944, L. D. Haigh, W. A. Albrecht, M. F. Miller, E. W. Cown, and J. H. Long.

"Fertilizing Commercial Blueberry Fields in New Jersey," Agr. Exp. Sta., Rutgers Univ., New Brunswick, N. J., Cir. 483, May 1944, Charles A. Doehlert.

"Tonnage Report July 1, 1943 through June 30, 1944," Dept. of Fert. Insp. & Analysis, Clemson Agr. College, Clemson, S. C., H. J. Webb.

"Some Factors Affecting the Utilization of Phosphoric Acid in Soils by Plants in Pot Experiments," Agr. Exp. Sta., A. & M. College of Tex., College Station, Tex., Bul. 647, April 1944, G. S. Fraps and J. F. Fudge.

"Virginia's Field and Truck Crop Fertilizer Recommendations," Agr. Ext. Serv., Blacksburg, Va., Cir. E-341 (Rev.), Aug. 1944.

Soils

"Physical Land Conditions in Polk County, Georgia," U.S.D.A., Washington, D. C., Phys. Land Survey 34, 1944, J. H. Winsor and C. L. Veatch.

"Soil Treatments for Winter Wheat," Agr. Exp. Sta., Univ. of Ill., Urbana, Ill., Bul. 503, July 1944, L. B. Miller and F. C. Bauer.

"Soil Practices for Production—Profit Conservation," Ext. Serv., Mich. State College, East Lansing, Mich., E. Folder F-57 (Rev.), June 1944, J. A. Porter and L. Braamse.

"Soil Survey—Tishomingo County, Mississippi," U.S.D.A., Washington, D. C., Series 1937, No. 10, June 1944, A. C. Orvedal and Thomas Fowlkes.

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Crops

¶ Results of field trials of different fertilizer treatments on four types of peanuts in North Carolina are given in North Carolina Agricultural Experiment Station Agronomy Information Circular 135 entitled "Report on Peanut Experiments Involving Variety-Fertility Combinations Conducted in 1943." This work was carried on by G. K. Middleton, E. F. Schultz, Jr., W. E. Colwell, and N. C. Brady. While the Improved Spanish type gave high yields, the seed of this is available only in small amounts, and of the ordinarily grown types, Virginia Bunch gave the highest yields. North Carolina Runner and White Spanish followed in order.

In order to get the best yields on Virginia Bunch and North Carolina Runner types, landplaster or calcium sulphate had to be applied along with muriate of potash. When landplaster was not used, the Virginia Bunch did not produce at all well. The White Spanish type yielded well with a limestone and potash combination. As a result of this work, the authors recommend that 75 lbs. of muriate of potash be applied as a top-dressing at emergence, and that 400 lbs. of landplaster per acre be applied on the foliage at the time of blooming when growing the Virginia Bunch type. When growing the Spanish type, 400 lbs. of dolomitic limestone in the row and 75 lbs. of muriate of potash at emergence are recommended.

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"Sweet Corn Field Trials, 1943," Agr. Exp. Sta., Univ. of Md., College Park, Md., M. Publ. 20, Dec. 1943, R. G. Rothgeb.

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"Pruning the Highbush Blueberry," Agr. Exp. Sta., Mich. State College, East Lansing, Mich., T. Bul. 192, May 1944, W. T. Brightwell and Stanley Johnston.

"Smooth Bromegrass Seed Production in Michigan," Agr. Exp. Sta., Mich. State College, East Lansing, Mich., Cir. Bul. 1942, June 1944, B. R. Churchill.

"Strawberry Growing in Michigan," Ext. Div., Mich. State College, East Lansing, Mich., E. Folder F-55, April 1943.

"Soybeans for Beans," Ext. Div., Mich. State College, East Lansing, Mich., E. Fold. 59, April 1943, C. R. Megee.

"What Makes Better Alfalfa," Ext. Div., Mich. State College, East Lansing, Mich., E. Fold. 61, May 1943, S. T. Dexter.

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"Growing Grapes in Washington," Ext. Serv., State College of Wash., Pullman, Wash., E. Bul. 271, First Rev. April, 1944, John C. Snyder.

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"Grasses and Clovers for Greater Production in Western Washington, Agr. Ext. Serv., State College of Wash., Pullman, Wash., Cirs. 79-83, June 1944, Alvin G. Law and I. M. Ingham.

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"Cauliflower and Broccoli Varieties and Culture," U.S.D.A., Washington, D. C., F.B. 1957, 1944, Ross C. Thompson.

"A Monographic Study of Bean Diseases and Methods for Their Control," U.S.D.A., Washington, D. C., T.Bul. 868, June 1944, L. L. Harter and W. J. Zaumeyer.

Economics

¶ There is a wealth of information in "Northeast Agricultural Atlas," prepared by the Northeast Post-War Planning Committee of the U. S. Department of Agriculture. The area considered in this volume covers all of New England and the Mid-Atlantic States including Delaware and Maryland. By means of numerous maps, tables, and explanatory material, information is given on the general country, that is, whether coastal plain, hilly, or mountainous; the kinds of soil found in the various sections together with brief notes on their adaptations and fertility; crops grown; fertilizer consumed; equipment of the farm; forest and woodlot resources; health and medical facilities; marketing facilities; and soil conservation work. Much other information and many helpful statistical tables are included in this excellent reference book.

¶ The mobilization of Canadian agriculture to meet war-time requirements is set forth in "Objectives for Canadian Agriculture in 1944," prepared by the Agricultural Supplies Board of the Dominion Department of Agriculture. The performance of Canadian farmers under this program is now a matter of history, but the information contained in the publication serves as an excellent source of data on Canadian agriculture. The goals in 1944 for grains were not much higher than in the preceding year, except in the case of corn for grain, which is a comparatively small factor in the Dominion. Livestock production goals were slightly above the preceding year, while dairy goals were either the same or slightly lower. Rather large increases were planned for the oilseed crops, except for flaxseed, and large increases were desired also for field crops such as beans, peas, sugar beets, and tobacco. Particularly large increases were wanted in the leguminous forage crops grown for seed, since Canadian seed is an important factor in both Canadian and United States agriculture. In the publication, a great deal of statistical data are given on the production of crops and agricultural products in the preceding years, which not only are a handy reference, but serve to show how important is Canada in North American agriculture.

¶ A survey of practices by seed potato producers in Vermont furnishes material for Bulletin 504 of the Vermont Agricultural Experiment Station. This is entitled "The Economics of Certified Seed Potato Production II—Factors which Affect the Cost of Production" and was prepared by J. A. Hitchcock. A considerable variation in outlay for seed was found. There was a tendency for yield to increase as the seed cost per acre increased, with a slight drop in seed cost per bushel of production. Yield increased as seed rate increased, but the seed cost per bushel of yield

also increased as the seeding rate increased. The amount of fertilizer used per acre tended to increase as the acreage in potatoes per farm increased. The reverse was true in the case of manure. Growers of Green Mountain potatoes tended to use more fertilizer than growers of Cobblers. As expenditure per acre for fertilizer increased, yield increased, but the fertilizer charge per bushel yield also increased. When it came to dusting, the growers of small acreages tended to make heavier applications than those of larger acreages, but the larger growers made more applications during the season, so that the total quantities used over the season were about the same. There was little apparent relationship between spraying practices and yield. On farms with very small acreage, the costs of labor per acre and per bushel were high, but as the acreage increased, the cost dropped rapidly and apparently about all of the economies of utilization of labor resources accompanying increased acreages are reached at 10 or 12 acres. The total cost per acre of producing seed potatoes broke down as follows: 17% for seed, 18% for fertilizer, 7% for spray and dusting, 28% for labor, 12% for power, and 6% each for machinery, land, and miscellaneous. The total average cost of production was $161 per acre. Total cost of production per acre was highest among the small growers, and declined rapidly as the acreage increased up to about 8 or 10 acres, after which there was no change, again indicating that about full efficiency can be obtained at this acreage. Other studies and relationships are given in this bulletin, which will be of interest to those growing potatoes. This survey was made some years ago, but the author feels that the relationships and costs involved have not materially changed and that the conclusions are valid for present conditions.

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"Riverside County Navel Orange Study," Farm Adviser P.O. Bldg., Riverside, Calif., 1943.

"Settlement Problems in Northwestern Quebec and Northeastern Ontario," Dept. of Agr., Dominion of Canada, Ottawa, Canada, Publ. 758, T.Bul. 49, Feb. 1944, A. Gosselin and G. P. Boucher.

"Florida Farm Prices," Agr. Exp. Sta., Univ. of Fla., Gainesville, Fla., Bul. 399, June 1944, A. H. Spurlock and C. V. Noble.

"Improving Farm Tenure in the Midwest," Agr. Exp. Sta., Univ. of Ill., Urbana, Ill., Bul. 502, June 1944.

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"Area Analysis and Agricultural Adjustments for Ness County, Kansas," Agr. Exp. Sta., Kansas State College, Manhattan, Kansas, A. E. Rpt. 23, May 1944, W. H. Pine, M. L. Otto, and H. E. Myers.

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"Agricultural Production and Types of Farming in Minnesota," Agr. Exp. Sta., Univ. of Minn., St. Paul, Minn., Supl. to Bul. 347, Rev. June 1944, Selmer A. Engene and George A. Pond.

"Commercial Agricultural Production and Marketing Methods and Facilities in Mississippi," Agr. Exp. Sta., Miss. State College, State College, Miss., Bul. 394, Oct. 1943, D. Gray Miley.

"Rural Land Market Activity in Mississippi," Agr. Ext. Sta., Miss. State College, State College, Miss., Bul. 406, June 1944, D. E. Young, M. A. Brooker and F. J. Welch.

"A Study of Cost and Income from Peanuts," Agr. Exp. Sta., N. C. State College, Raleigh, N. C., Sp. Cir. 2, April 1943, J. C. Downing, H. B. James, and R. E. L. Greene.

"Association of Crops with Soils and Other Factors, Jefferson County, Tennessee," Agr. Exp. Sta., Univ. of Tenn., Knoxville, Tenn., R. R. Ser. Mon. 169, May 25, 1944, H. J. Bonser.

"Proposed Changes in Postwar Agricultural College Curricula," Agr. Exp. Sta., Univ. of Tenn., Knoxville, Tenn., R. R. Ser. Mon. 170, May 31, 1944, C. E. Allred and H. J. Bonser.

"The Food Supply of Texas Rural Families," Agr. Exp. Sta., A. & M. College of Tex., College Station, Tex., Bul. 642, Oct. 1943, Jessie Whitacre.

"A Summary and Appraisal of Texas Real Property Tax Laws," Agr. Exp. Sta., A. & M. College of Tex., College Station, Tex., Bul. 645, Jan. 1944, W. R. Parks, L. P. Gabbard, and H. C. Bradshaw.

"Significance of the Patronage Dividend as Applied by Cooperative Cotton Gin Associations," Agr. Exp. Sta., A. & M. College of

Tex., College Station, Tex., Bul. 649, May 1944, W. E. Paulson and R. T. Baggett.

"Purchasing in Texas Counties," Agr. Exp. Sta., A. & M. College of Tex., College Station, Tex., Bul. 653, July 1944, H. C. Bradshaw and E. J. Hervey.

"Shall I Be a Farmer?" U. S. D. A., Washington, D. C., AWI-105, July 1944, P. V. Maris.

"Report of the Farm Credit Administration," U. S. D. A., Washington, D. C., Dec. 31, 1943.

RAYMOND MIZELLE of Woodard, Bertie County, North Carolina, produced 7 bales of cotton on 4.2 acres of land in 1943, the best crop he ever made, according to County Agent B. E. Grant in a report to the North Carolina State College Extension Service. On one plot of two acres, he made four bales.

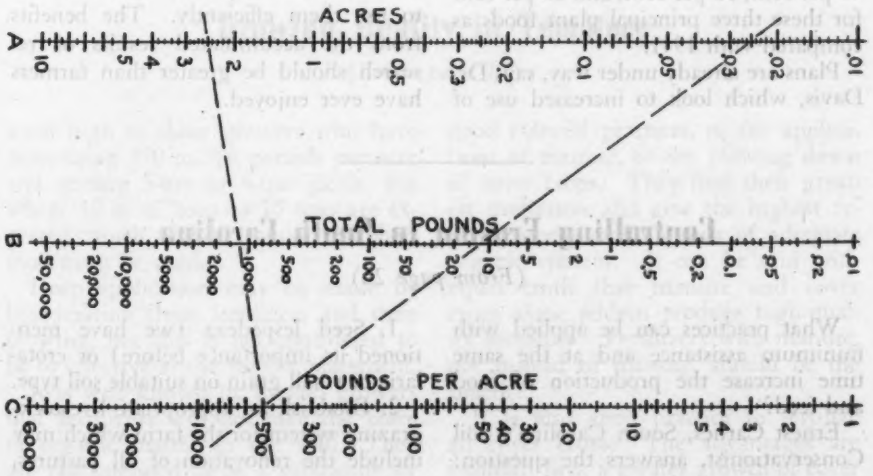
Mr. Mizelle planted Coker 100 No. 5 seed, which had been treated. He used 500 pounds of 3-8-5 fertilizer per acre and top-dressed with 100 pounds of nitrate of soda and 100 pounds of muriate of potash per acre. Mr. Grant reported that the extra potash paid well because one could easily see where it was left off.

Mr. Mizelle makes it a practice to plant crotalaria in all his corn for soil building, and last year the crotalaria made excellent growth. He says that his best yields of peanuts come on land which has previously been in corn and crotalaria.—*N. C. Agricultural Extension Service.*

How Many Pounds Per Acre

NO doubt every reader frequently has occasion to compute "pounds per acre" problems. This chart will prove to be a great help in making such computations. The chart gives the total number of pounds of anything to be used on any plot of ground without any "longhand" figuring whatever.

For example, let us suppose that you want to apply 500 pounds per acre.



Let us also suppose that the plot is very small—only .025 acre. How many pounds should be used?

Run a straight line through the .025, column A, and the 500, column C, and the intersection with column B gives the answer as 12.5 pounds. One of the dotted lines drawn across the chart shows how it is done.

The other dotted line across the chart shows that if there are 2.5 acres, and that if you are told to apply 500 pounds per acre, the answer is 1,250 pounds.

The range of the chart is from .01 acre to 10 acres, and one pound per acre to 6,000 pounds per acre. However, by keeping tab on the ciphers this chart is easily applicable to any number of acres and any number of pounds per acre. Thus if the plot is 25 acres,—12,500 pounds will be required: 250 acres,—125,000 pounds, etc. With the aid of this chart you will be able to quickly do problems that might produce headaches and consume much time when performed by the old long-hand method.

W. F. SCHAPHORST,
Newark, New Jersey.

Fertilizer Use To Continue

An expansion of fertilizer production is to be anticipated in the years after the war, in the opinion of Dr. R. O. E. Davis, in charge of fertilizer research in the U. S. Department of Agriculture. The increased uses of fertilizer that have been a necessary feature of wartime agriculture will be carried over, at least in part, to the post-war period. He estimates that the plant food in the fertilizers used this year will total about 650,000 tons of nitrogen, 1,380,000 tons of phosphoric acid, and 610,000 tons of potash, representing increases of about 43 per cent, 38 per cent, and 33 per cent for these three principal plant foods as compared with 1941.

Plans are already under way, says Dr. Davis, which look to increased use of fertilizers in helping to meet food and clothing needs of the world at peace. The activities of the Department in wartime, he says, have actually been a speeding up of its peacetime program. Progress in fertilizer research has introduced new materials, new methods, and new practices in soil treatment and crop production that have meant millions of dollars annually to farmers both in war and in peace.

After the war, in the opinion of Dr. Davis, farmers will have better opportunities to use improved fertilizers and to use them efficiently. The benefits from the accumulated results of research should be greater than farmers have ever enjoyed.

Controlling Erosion in South Carolina

(*From page* 26)

What practices can be applied with minimum assistance and at the same time increase the production of food and feed?

Ernest Carnes, South Carolina's Soil Conservationist, answers the question:

1. Seed lespedeza (we have mentioned its importance before) or crotalaria or small grain on suitable soil type.

2. Establish an appropriate livestock-grazing system for the farm which may include the renovation of all pastures,

the planting of a sufficient amount of annuals or perennials for temporary annual grazing.

3. Use every idle acre on the farm for the production of needed food or feed crops. Idle or slacker acres only help the Axis.

4. Plant draws or other areas of the farm to perennial crops of lespedeza sericea, kudzu for water disposal and hay crops.

5. Plan for the production, harvesting, and care of legumes and other seed for the farm.

6. To partially offset the fertilizer shortage, take special care of all farm manures and construct synthetic compost heaps where materials are available.

There are 21 soil conservation districts in the State, embracing all of the 46 counties. South Carolina is the second state in the United States to reach this goal, districts having been organized in all the counties in Alabama some time ago.

On October 31, 1943, district conservation farm plans had been written for 9,568 farms in the State, covering a total of 1,648,403 acres and signifying a determined effort on the part of South Carolina farmers to keep the topsoil in their fields where it belongs instead of letting it wash away.

Here are some of the highlights of the progress made:

Trees have been set out on 21,291 acres. Farmers themselves bought and planted 9,153,961 trees; the districts furnished 15,908,798. More than 21,000 acres of permanent pasture have been improved by reseeding and fertilizing; 18,965 acres of kudzu set out; approved rotations have been established on 217,556 acres of cultivated land; grass for permanent hay has been planted on 7,070 acres, and grassed meadow strips for hay and to serve as terrace outlet channels have been established on 12,145 acres. These practices have been further augmented by 154,755 acres of terracing.

These figures, covering 8,251 farms, are from the December 31, 1942, report. Since that time a great deal that does not show in the foregoing figures has been accomplished, but the reports for 1943 will not be available for some time.

By the end of June 30, 1943, 92,689 acres of idle land had been transferred to profitable farming use. Of this amount 29,147 acres were returned to cultivation, 23,347 acres to permanent pasture, 24,972 acres to woodland, and vegetation attractive to wildlife was planted on 3,820 acres.

Growing Quality in Tomatoes

(*From page* 17)

seem high to those growers who have been using 250 to 500 pounds per acre and getting 5-ton or 6-ton yields, but where 10 to 12 tons or 15 tons are expected, much higher amounts of plant food must be used.

Deep application may be made by broadcasting these fertilizers and then plowing, but this is not considered to be so effective as the furrow placement.

It is well known by tomato growers that fertilizers will not take the place of organic matter in the soil. They are not intended to be a substitute for good cultural practices, or for applications of manure, or the plowing down of cover crops. They find their greatest usefulness and give the highest returns when used on soils of adequate organic content. It can be said with equal truth that manure and cover crops alone seldom produce high-quality tomatoes. Fertilizers with manure, not instead of manure, should be the practice.

It is also good practice to fertilize all cover crops. The advantages are twofold: first, a greater growth of cover

This tractor attachment places the fertilizer on the bottom of the furrow.

crop will be obtained; and second, the vegetation itself will be higher in nutrient materials for use by the succeeding crop. The latter point is given emphasis in results reported from the Newman Fertility Field, where W. B. George of the Kemptville Agricultural School reports that well-fertilized hay plants contained 2.3 per cent phosphoric acid, while the poorly fertilized plants contained only 0.9 per cent. The same may be said of manure. All farmyard manure is not of equal value in nutrients. Its value will depend not only on its care and handling, but on the mineral constituents of the forage from which it was produced.

In the interests of greater profit to the grower and to achieve a reputation for high-quality tomato products, yields per acre should be substantially increased. This is not difficult to accomplish. A study of soil needs, as indicated by soil tests, a knowledge of plant-food requirements, and the use of modern technique in applying the right sort of fertilizers at the right time —these, along with retention of organic matter and employment of good cultural methods, will increase yields, improve quality, and enhance the profits.

Thomas Jefferson, Far-Sighted Farmer

(*From page* 21)

these improved machines not only do better farming but make possible the wiser use of labor. He worked toward the use of less labor through the application of mechanical principles, and the improvement of plants and livestock. He also worked toward arrangements that would bring continuity in the use of labor and avoid the peaks that are still plaguing us today.

His interest in the improvement in livestock was centered primarily in sheep. He was among the first in this country to have a Merino ram and worked constantly to improve his flock. He proposed to furnish Marino rams to other counties and outlined a plan for improvement throughout the counties of the State that has been called the precursor of modern cooperative breeding circuits.

Jefferson's suggestions for the improvement of rural life were practical though far ahead of his time. He helped to organize the Albemarle County Agricultural Society in 1817 and made outlines for its study and work. He urged the forming of other agricultural societies as centers for activity and information. He had an amazing agricultural library of his own at Monticello—probably the best in existence. It included contributions in Latin, Greek, French, and Italian. In 1809 he outlined a plan for a small circulating library, such as he believed should operate in every county: "I have often thought that nothing could do

more extensive good at small expense." He believed ardently in thorough-going correspondence to promote and exchange agricultural and farming knowledge. His correspondence of this sort with friends and strangers both in this country and Europe is among the real wonders. He urged the teaching of agriculture in the institutions of higher learning, and made specific recommendations at the Univeristy of Virginia. His recommendations have been called the forerunners of the Land Grant College Act which was signed some 60 years later. He was the scientist in agriculture. "Agriculture," he stated, "is a science of the very first order."

To cover all of Jefferson's firsts, all his advanced farmer enthusiasms, all his contributions to agriculture could fill a volume. His philosophies relating to country life and agrarianism could fill another. To the study of these phases of his life alone certain men have given months if not years. Most of us must be content with the bare outlines, the simplest facts, and the gist of his beliefs in regard to these matters that lay so close to his heart: "Cultivators of the earth are the most valuable citizens. They are the most vigorous, the most independent, the most virtuous, and they are tied to their country, and wedded to its liberty and interests by the most lasting bonds."

It has been said that to Jefferson all life was education. That he was abreast of the latest developments in practically every field of knowledge. That his was one of the most remarkably diversified minds this country has ever known. That in agriculture he was eminent not only as a farmer but as an agricultural statesman. And finally, that many have loved the land but no one has done more for it.

Mississippi Crop and Pasture Production Program, 1942-43

(*From page* 14)

Name & Address of Farmer Soil	Crop	Fertilizer Treatment	Yield Per Acre Gr. Wt., Lbs.
7. R. M. Branch Goodman, Miss. Terrace soil	Wild Winter Peas	250# Superphosphate 500# Lime	7,187
		250# Superphosphate 500# Lime 100# Muriate of potash	16,661
8. C. S. Hamer Kilmichael, Miss. Hill land	Wild Winter Peas	500# Basic slag	16,988
		500# Basic slag 100# Muriate of potash	28,636
9. Scott Wafford Mantee, Miss. Bottom land	Wild Winter Peas	500# Basic slag	11,211
		500# Basic slag 100# Muriate of potash	14,592
10. J. E. Scarbrough Cumberland, Miss. Branch bottom	Wild Winter Peas	200# Superphosphate 500# Lime	20,908
		200# Superphosphate 500# Lime 100# Muriate of potash	31,472
11. Thompson & Carroll Lexington, Miss. Hill land	Pasture, Hop Clover & Other Clover	250# Superphosphate	11,761
		250# Superphosphate 100# Muriate of potash	14,697
12. Thompson & Carroll Lexington, Miss. Terrace soil	Hop & White Clovers Seed Field	250# Superphosphate	8,712
		250# Superphosphate 100# Muriate of potash	13,721

Name & Address of Farmer Soil	Crop	Fertilizer Treatment	Yield Per Acre Gr. Wt., Lbs.
13. H. P. Watson Lexington, Miss. Terrace soil	White Clover Pasture	250# Superphosphate 500# Lime	8,058
		250# Superphosphate 500# Lime 100# Muriate of potash	12,196
14. B. E. Presley Pickens, Miss. Terrace soil All clover died on check plot.	Oats & White Clover	250# Superphosphate 1000# Lime	11,761
		250# Superphosphate 1000# Lime 100# Muriate of potash	26,136
15. B. E. Presley Pickens, Miss. Terrace soil	Oats & Pasture Mixture	250# Superphosphate 1000# Lime	13,068
		250# Superphosphate 1000# Lime 100# Muriate of potash	24,829
16. H. W. Vandiver Cruger, Miss. Delta foothills	White Clover	250# Superphosphate 500# Lime	6,425
		250# Superphosphate 500# Lime 100# Muriate of potash	10,454
17. G. E. Bobb Vicksburg, Miss. Delta foothills	White Clover	No Treatment	10,345
		100# Muriate of potash	11,979
18. W. H. Simpson Winona, Miss. Branch Bottom	Red Clover & Oats	600# Basic slag	7,949
		600# Basic slag 100# Muriate of potash	14,483
19. W. S. Pittman Winona, Miss. Terrace soil	Red Clover & Oats	500# Basic Slag	18,401
		500# Basic Slag 100# Muriate of potash	23,522
20. J. E. Scarbrough Cumberland, Miss. Branch bottom Seed crop on potash plot estimated 100% better than check.	White Clover	200# Superphosphate 500# Lime	10,236
		200# Superphosphate 500# Lime 100# Muriate of potash	9,038
21. M. M. McKinnon Coldwater, Miss. Bottom land	Alfalfa 1 cutting	250# Superphosphate 500# Lime	9,365
		250# Superphosphate 500# Lime; 30# borax 100# Muriate of potash	13,285
22. Part-time Farm State College, Miss. Bottom Land	Alfalfa 3 cuttings	200# T. Superphosphate 200# T. Superphosphate	29,185
		200# Muriate of potash 200# T. Superphosphate 200# Muriate of potash	30,056
Alfalfa seeded fall 1942		30# Borax	40,942
23. Rex Reed Tupelo, Miss. Bottom land	Alfalfa 1 cutting	200# T. Superphosphate 200# T. Superphosphate	9,038
		200# Muriate of potash 200# T. Superphosphate 200# Muriate of Potash	9,801
		30# Borax	13,285

Name & Address of Farmer Soil	Crop	Fertilizer Treatment	Yield Per Acre Gr. Wt., Lbs.
24. W. A. Evans Muldon, Miss. Prairie land (1-acre plots, treated 3 years) Wild barley on plot 5	Pasture Hop Clover, Black Medic & Grasses	No Treatment 200# Superphosphate 100# Muriate of potash 200# Superphosphate 100# Muriate of potash 200# Superphosphate 100# Muriate of potash	12,954 13,612 14,697 14,697 10,345
25. Thompson & Carroll Lexington, Miss. Terrace soil	Dallas grass & Lespedeza	250# Superphosphate 250# Superphosphate 100# Muriate of potash	12,196 24,393
26. K. H. Diggs Lexington, Miss. Hill land	Kudzu	250# Superphosphate 250# Superphosphate 100# Muriate of potash	5,000 20,000
27. R. L. Fulcher Louisville, Miss. Terrace soil	Tenn. 76 Lespedeza	No Treatment 100# Muriate of potash	8,167 10,998
28. S. L. Bennett Louisville, Miss. Bottom land	Kobe Lespedeza	No treatment 100# Muriate of potash	8,058 17,859
29. Brooks Watkins Vardaman, Miss. Terrace soil	Common Lespedeza	500# Lime 500# Lime; 200# Manure salts 2000# Lime 2000# Lime; 200# Manure salts No treatment (check) 200# Manure salts 100# T. Superphosphate 100# T. Superphosphate 200# Manure Salts 100# T. Superphosphate 2000# Lime 100# T. Superphosphate 2000# Lime; 200# Manure salts	4,791 6,534 3,702 6,307 2,395 5,445 4,573 4,791 3,920 5,880
30. C. N. Wagner Calhoun City, Miss. Hill land	Common Lespedeza	400# Basic Slag 400# Basic Slag 200# Manure Salts	2,831 5,009
31. Jerome West Calhoun City, Miss. Terrace soil	Common Lespedeza	500# Lime 500# Lime; 200# Manure salts 2000# Lime 2000# Lime; 200# Manure salts No Treatment 200# Manure Salts 100# T. Superphosphate 100# T. Superphosphate 200# Manure Salts 500# Lime; 100# T. Superphosphate 500# Lime 200# Manure Salts	7,296 11,325 7,296 10,563 10,563 7,296 8,712 14,048 10,563 12,741
32. J. T. & W. D. Clark R 1, Foxworth, Miss. Sandy soil	Lespedeza Hay	No Treatment 75# Muriate of Potash	1,080 Hay 2,000 Hay

Name & Address of Farmer Soil	Crop	Fertilizer Treatment	Yield Per Acre Gr. Wt., Lbs.
33. Brooks Watkins Vardaman, Miss. Hill land	Lespedeza Sericea	100# T. Superphosphate 500# Lime 100# T. Superphosphate 500# Lime; 200# Manure Salts	 20,000 40,000
34. Henry Henderson Holmes County, Miss.	Cotton	30# Nitrogen (Uramon) 30# Nitrogen (Uramon) 100# Muriate of Potash	1372 S. Cotton 1666 " "
35. Howard Webster Holmes County, Miss.	Cotton	30# Nitrogen (Uramon) 30# Nitrogen (Uramon) 100# Muriate of potash	1127 " " 1470 " "
36. H. W. Vandiver Cruger, Miss. Delta foothills	Cotton	30# Nitrogen (Uramon) 30# Nitrogen (Uramon) 100# Muriate of potash	950 " " 1440 " "
37. B. N. Simrall Redwood, Miss.	Cotton Delfos 651 (Wilt Resistant)	Vetch No fertilizer Vetch 100# Muriate of potash	 804 " " 1208 " "
38. B. N. Simrall Redwood, Miss.	Cotton Delfos 531-C	Vetch No fertilizer Vetch 100# Muriate of potash	 446 " " 1054 " "
39. S. G. Summers Nesbitt, Miss.	Cowpeas	500# Lime 2000# Lime 100# T. Superphosphate 100# T. Superphosphate 500# Lime No Treatment (Check) 100# Manure salts 500# Lime; 100# Manure salts 100# T. Superphosphate 100# Manure Salts 100# T. Superphosphate 500# Lime 100# Manure Salts	10,800 14,100 7,500 10,300 4,500 8,700 8,800 9,000 9,200
40. H. C. Marion Mooreville, Miss. Hill land	Soybeans	500# Lime 500# Lime; 167# Manure salts 2000# Lime 2000# Lime; 167# Manure salts No Treatment (Check) 167# Manure Salts 100# T. Superphosphate 100# T. Superphosphate 167# Manure Salts 500# Lime 100# T. Superphosphate 500# Lime 100# T. Superphosphate 167# Manure Salts 2000# Lime; 100# T. Super. 2000# Lime; 100# T. Super. 167# Manure Salts	8,712 9,583 11,458 12,197 5,227 6,010 10,692 12,197 15,260 17,424 10,420 11,326

Name & Address of Farmer Soil	Crop	Fertilizer Treatment	Yield Per Acre Gr. Wt., Lbs.
41. J. C. Burt Hattiesburg, Miss. Terrace soil	Soybeans For seed	500# Lime 500# Lime; 100# Manure salts 2000# Lime 2000# Lime; 100# M. Salts No Treatment (Check) 100# Manure Salts 100# T. Superphosphate 100# T. Superphosphate 100# Manure Salts 100# T. Superphosphate 500# Lime 100# T. Superphosphate 500# Lime; 100# Manure salts 100# T. Superphosphate 2000# Lime 100# T. Superphosphate 2000# Lime; 100# M. salts	36 Bu. 40 Bu. 35 Bu. 38 Bu. 32 Bu. 35 Bu. 40 Bu. 45 Bu. 45 Bu. 50 Bu. 50 Bu. 58 Bu.
42. J. C. Copeland Booneville, Miss. Terrace soil	Soybeans For Hay	500# Lime 500# Lime; 200# Manure salts 2000# Lime 2000# Lime; 200# Manure salts No Treatment (Check) 200# Manure Salts 100# T. Superphosphate 100# T. Superphosphate 200# Manure Salts 100# T. Superphosphate 500# Lime 500# Lime; 200# Manure salts	10,454 17,946 10,018 16,552 9,060 20,908 9,583 20,473 13,068 16,552
43. H. C. Shirley Marietta, Miss. Bottom land	Soybeans For Hay	No Treatment 200# Manure Salts	17,424 23,522
44. F. C. Carlisle New Albany, Miss. Hill land	Kudzu	No Treatment (Check) 100# Manure Salts 100# T. Superphosphate 100# T. Superphosphate 100# Manure salts	8,276 12,705 15,246 17,061
45. Fred Getwan Brookhaven, Miss. Bottom land	Soybeans For Hay	No Treatment 200# Manure Salts	5,663 8,276
46. Roy Pearce Dorsey, Miss. Terrace soil	Corn	No Treatment 100# Manure Salts	16 Bu. 25 Bu.
47. J. T. & W. D. Clark R 1, Foxworth, Miss.	Corn	No Treatment 75# Muriate of potash 100# Muriate of potash	15 Bu. 20 Bu. 24 Bu.

ENOUGH TROUBLE

Mr. White—Allow me to present my wife to you.

Mr. Green—Thanks, but I have one!

ARMY FUN

Sarge—I was almost killed twice in a jeep.

Pvt.—Once would have been enough!

GRUB

(*From page* 5)

Who in tarnation could have foreseen the battle royal to ensue between cow milkers and soybean and cotton crushers over a spread for toast and pancakes? And how about the array of frozen lockers and southern produce sold daily to hungry people a thousand miles away? Yes, and how about dried turkey and fruit pastes and process cheese, and citrus groves catering to the breakfast menus of everyday folks up on our northland farms?

Verily, the man who raises the raw food nowadays has so little to say about its destiny and what happens to it en route to the esophagi of consumers that we marvel at the consequences. The old theatrical call, Quo Vadis—whither goest thou, is a plain description of the situation as far as the humble food producer is concerned.

The old idea was that if we had minerals enough in the soil all would be well; but now everybody from the cook to the calf wants to know the percentage of minerals in the grub. The onward rush of science has wiped old, simple notions off the map.

Fourth, satisfied old-timers around that groaning larder would have scoffed at anyone who hinted that maybe sooner or later the power of the land to make food naturally by its own processes would peter out.

Of course, here and there, in remote spots on very lean and sandy land the farmers got disgusted and quit. But when you recall that this Thanksgiving table I mention was heaped with goodies gleaned from a No. 1 black upland prairie soil, the case is different.

When tinges of yellow appeared in corn blade and the roots withered, when grain did not fill out well, when clover thinned and died, and when livestock fared badly on certain kinds of roughage—it was always the season, the phase of the moon, or the time and rate of seeding that got the blame.

When little rivulets trickled down easy slopes and gradually plowed furrows and then gashes and finally gullies—this was just tough luck and common to country experience. Nothing ailed the birthright, which was the fair land that Grandpa took up from Tyler. To be a good steward was just working hard from morn to eve and raising enough kids to save expensive hired help.

Few talked about the sacredness of the family-sized farm when the soil was new and rich. Their idea of a grub-stake was the farm-sized family!

BUT right now in the county, where we ate that hefty meal of victuals, there is more commercial fertilizer and ground limestone used annually than the whole state used before. In this aspect of things we have improved indeed.

Fifth, as we scooped in that volume of viands it never occurred to us that some day there would be too many folks around the farm to make it pay.

Sometimes I think we don't know it yet, when I hear the hectic reformers advocating a general exodus of the returning war veterans to agricultural holdings on easy federal loans.

Probably this question raises more hell and darnation than any single moot topic you can fetch up by hand. Farm engineers in conventions predict marvelous mechanical inventions that outdo the hitherto wondrous strides taken in unbending weary backs. One-man farming with complete tractor outfits from seeder to combine, plus nifty automatic chore-boys around the stable and feed-lot, electricity and its modern cousin, electronics, all presage the shift in our agricultural enterprise.

Technology has its benefits, and carries no less its threats, to former rural methods and motives. Larger farms run with less man and woman power are in the offing. Or else, we must

learn how to clip coupons on the farms and become a leisure class more than hitherto. The main trouble will be to convince farm folks that culture and rest are as essential to goldliness and godliness as the sixteen-hour day. Can you vision a farm Thanksgiving with ersatz victuals and only a family of two or three to partake? In that instance, who will be left to brag about Tyler and the original deed?

I maintain we must keep some farms running to raise healthy youngsters on, but it looks like a section of land will be the minimum.

SIXTH, if the table chatter drifted over to mortgages and chattels, our early Thanksgiving diners would have paused long enough in their munching to refer the inquiry to a provident neighbor with cash to lend. In other words, back there the supply of home capital, private, or public in banks, would have taken ample care of the local needs.

About twenty years ago a study in one county out my way showed that ninety per cent of the mortgages were held locally, and payment was prompt, interest not high. Is there any need to plunge further into comparisons, to show how far the loan system has drifted from that epoch to now, when the government, insurance concerns, city banks, and distant investors hold most of the gilt-edge paper covering active farms?

In the other days, a farmer hung his head in shame if he could not pay off his obligations. In later times, we have seen rural organizations pray hard for more chances to get farmers into debt, on easy terms for lifetime periods. This has been caused somewhat by the commercial spirit of agriculture as it runs today, changing farms into modern business ventures, and with less emphasis upon the sentimental side of human life.

Today many farmers are movers and shifters, tramps and drifters. Much of the old permanence and gritty home tradition has vanished. It's only the high dollar and the quick profit that hitches them to the plow handles. And, by and large, who is there to blame agriculture for this alone? If it is necessary thus to keep step with progress, let's be constructive about the present rather than critical of what's gone.

And finally, take the sixth comparison. Those old gormandizers around the festive board would have vouched to a man that a youngster could get all the training he would ever need to succeed in farming by staying at home and watching Pa and the neighbors.

What could be more natural than this assumption, or religion, if you prefer? Every man-jack of the crew chewing lustily there had acquired his success the hard, homespun way, without much recourse to anything save the calendar and the climate. A few farm papers were taken and thoroughly read, but most of them consisted of printed personal experiences tossed back and forth, interlarded with poems and home sentiment. Laboratories and colleges were just getting a meager start, and few heeded them. No commercial companies maintained research workers to find out why their products did not pan out well.

IF you go today and join a festive harvest assembly out in the country it's ten to one that every group will include several college short-course men, a whole mess of Future Farmers, and no end of ambitious 4-H devotees. Each day brings radio teaching and precept; each mail brings educational literature beyond the hope of the recipients to digest.

Yet all this change and progress in rural scenery has not gone far enough to banish from your mind and appetite the heady aroma of that glorious meal. Here at least one element of the old spirit stays put. So drag up a chair, stranger, and put your brogans under our mahogany. As long as we have good stomachs and normal appetites, agriculture is paramount forever! Let's quit talking and tackle the turkey!

TOUGH ON THE SCOTCH COLONEL

The Colonel of a Scotch regiment who was disliked by his men wanted to locate a sniper. He called for Sandy, the crack shot of the regiment, and said: "Sandy, there's a sniper over there. He's been shootin' at us all day. The fir-rst time, he knocked the hat off me and the second time he knocked the cigarette oot of ma mouth. Go over and get him. I think he's in yon clump of bushes."

Sandy went toward the spot and found a German hidden in a small tree. Sandy shook the tree and down fell the German, who threw up his hands and cried, "Kamrad, Mercy!"

Sandy looked at him disgustedly and said: "Mer-r-cy? Ye'll get nae mer-r-cy from me! Ye missed the colonel twice!"

Then there is the sailor who treated all his girls with wine. He wanted a little port in every sweetheart.

UNPALATABLE

"Brother Johnson," asked a wide-awake Negro divine in the South, "can you-all tell me why the lions didn't eat de Prophet Daniel?"

"No, pahson; why was it?"

"Because de most of him was backbone and de rest was grit."

Young and inexperienced father, gazing at triplets the nurse had just brought out: "We'll take the one in the middle."

"What's the matter, Mary?"

"I've got rheumatism in my muscles."

"You ought to visit a masseur."

"What's that?"

"A man who pinches you all over."

"Oh, you mean a marine!"

Chaplain: "Son, are you following the Ten Commandments?"

Seaman: "I don't know, Sir. It's all I can do to keep up with the station notices and memos."

SHAME ON GRANDMA

Grandmother was a diabetic patient, and rather given to "cheating" on her strict diet. After one violation she was sent to the hospital, where the only available room was in the maternity ward. Granddaughter was just outside the door when some visitors went past.

"What are you doing here, little girl?"

"I'm visiting my grandmother," she replied.

"Your grandmother!" exclaimed one. "What's *she* doing in here?"

"Oh," said the little girl brightly, "she's been cheating again!"

Father: "Do you suppose our son gets his intelligence from me?"

Mother: "He must. I've still got mine."

"Cheer up, John. A woman's 'no' often means 'yes.'"

"How about her 'phooey!'?"

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